

# THE AUTOMOBILE AND MOTOR REVIEW

WEEKLY

NEW YORK — SATURDAY, DECEMBER 6, 1902 — CHICAGO

10 CENTS

THE Automobile Club of New Jersey is especially fortunate in its location, in the noted Orange district, famous for its picturesque drives. Nature has located in close proximity to the club's habitat a most inviting hill for a climbing contest, the spur of the Orange Mountains, known as Eagle Rock. The

## Eagle Rock Hill Contest.

president and secretary, W. J. Stewart, held a very successful hill-climbing contest, Mr. Stewart himself making a record of 2:43 in a steam runabout.

This year it was decided to repeat the

with a number of outside cars, but the cheerless drizzle of the morning proved a damper, and the road surface was in

poor condition, with an inch or more of sticky mud.

The road itself, starting from the terminus of the trolley line in West Orange, winds up the hill with a moderate grade



CONTESTANTS CLIMBING STEEPEST PART OF GRADE AND MAKING TURN AT TOP OF HILL.

WAITING IN THE DRIZZLE BEFORE THE START.

READY FOR NEXT CONTESTANT TO CROSS THE TAPE.

bicyclist discovered this hill long ago, and made it the scene of many a classic contest, but of late years it has been known only to pleasure parties, who visit it for the broad outlook over miles of surrounding country. Last fall the club, mainly through the efforts of its energetic vice-

event, and Thanksgiving Day was selected. The announcement met with general approval, as testified by over thirty entries, and but for the very bad weather there would have been a large turnout of competitors and spectators. As it was, some, twenty competitors were present,

of 3 to 6 per cent. for the first half mile, then increasing to 10 per cent., and finally to 17 per cent. near the summit, where a turn at a right angle leads up a moderate grade to the finish. The total distance is officially given at 11.8 miles. The road-bed is of macadam and in good condition.

The start was set for 10 A. M., and Secretary Butler, of the Automobile Club of America, who had charge of the timing, was on hand with the Mors timing apparatus, but the Chief of Police of West Orange was also on hand demanding a permit for the trials. This occasioned a long delay, and it was not until after 12 o'clock that the first car was started. After three days of rain the outlook was discouraging on Thursday morning, with a light but persistent drizzle, but about 11 o'clock the sun appeared.

#### A FEW MISHAPS.

The first car up the hill was No. 9, a Toledo steamer, driven by Angus Sinclair, accompanied by a lady. Unfortunately, the timing apparatus was disarranged, and the time could not be taken. Each car was limited to a single trial, but Mr. Sinclair was informed that he might make a second attempt. He weighed the possible honors against the certainty of cold turkey, and decided not to try again. The Prescott steamer, No. 16, driven by H. M. Wells, the red car so well known in many previous competitions, broke a chain just before starting, and after this was replaced, in backing down the road for a start, ran into Harlan W. Whipple's big Packard car, a rear spring of the steamer smashing the radiator of the gasoline car. After this mishap was remedied as far as possible, the steamer having come off with but little damage, she started up the hill, but before going far the fire went out from careless manipulation of the lever, and she was compelled to withdraw.

The Mobile, No. 14, was little more successful, catching fire on the hill and being compelled to withdraw, though very little damaged.

#### STEWART MAKES GOOD TIME.

The next car was a Locomobile, No. 3, driven by W. J. Stewart, timed in 3:36 3-4. Then came an Oldsmobile, No. 5. This car, driven by I. D. Plank, had the curved front cut off and the muffler removed. It ran the hill in rather slow time, 6:06, and stopped for an instant just within sight of the finish; starting again as soon as the crank was turned.

Mr. Stewart now came up in No. 13, the yellow locomobile, in which he made the record last year. His time was 2:58 3-4. Then followed No. 30, a Duryea phaeton, driven by Dr. H. Power, in 4:26, and then a Winton, driven by C. E. Proctor, in 4:52 3-4.

#### NESTMAN WINS IN GASOLINE CLASS.

Shortly after 1 o'clock the Stevens-Duryea car, No. 20, started, with O. P. Nestman at the steering handle. It made a quick, quiet and steady ascent, and the announcement that the time was 2:45, record for the day, was received with cheers by the small crowd of spectators at the finish. This time was so far better than



COURSE OF THANKSGIVING DAY EAGLE ROCK HILL CLIMBING CONTEST.



that of any other gasoline machine, and even better than the best time for a steam carriage, that there was a general disposition to question its accuracy. A day or two later, after Mr. Butler had had time to compare his times with those of the timer at the starting point, he announced that a mistake of one minute had been made in the time, which should have been 3:45. The mistake arose through the fact that Mr. Butler was the only one present who was familiar with the use of the Mors timing instrument, and he had too many details to attend to simultaneously, and made a mistake of an even minute. Notwithstanding this correction, however, the Stevens-Duryea still holds its claim to the prize cup for gasoline machines, its time of 3:45 being the best of the day in that class. The machine was a new car that had been out of the factory less than a week.

The Long Distance car, No. 24, driven by H. M. Odeonie, made the run in 5:20; then came the Knoxmobile, No. 26, L. J. Wyckoff, in 7:15. Mr. Whipple started



PRIZE-WINNING STEVEN-DURYEA CAR AND O. P. NESTMAN.

## SUMMARY OF EAGLE ROCK HILL CLIMBING CONTEST.

	H.P.	Weight	Time.
3—Locomobile, W. J. Stewart, steam.....	4 1-2	750	3.36 3-4
5—Oldsmobile, I. D. Plank, gasoline.....	4	800	6.06
13—Locomobile, W. J. Stewart, steam.....	4 1-2	750	2.58 3-4
20—Duryea, Dr. H. Power, gasoline.....	6	900	4.26
7—Winton Tour, C. E. Proctor, gasoline.....	15	2900	4.52 3-4
28—Stevens-Duryea, O. P. Nestman, gasoline.....	8	1050	3.45
24—Long Distance, H. M. Odeonie, gasoline.....	7	1400	5.20
26—Knox, L. J. Wyckoff, gasoline.....	8	1400	7.15
32—Long Distance, J. G. Dale, gasoline.....	7	1400	4.49 3-4
12—Mobile, E. P. Washburn, gasoline.....	4 1-2	750	3.08
22—Prescott, H. M. Wells, gasoline.....	4 1-2	1400	3.43 1-4



MORS TIMING INSTRUMENT.

up the hill after making repairs to his radiator, but failed to make the summit. The Long Distance car, No. 32, J. G. Dale, took 4:49 3-4 for the climb; then came the Mobile, No. 12, driven by E. P. Washburn, in 3:08. Mr. Wells made a second trial in another Prescott, No. 23, the time being 3:43 1-4.

The Mobile Co. of America very generously tendered the use of two of its steam stages, in commission on the Tarrytown-on-the-Hudson route, to convey the newspaper men from lower Manhattan borough to the scene of the contest, a convenience that was much appreciated, especially when it came to ascending the hill itself.

After the finish a number of the officials were entertained at luncheon at the Orange Club by Mr. Whipple, several hours being passed very pleasantly. The club proposed to make the Eagle Hill climb an annual fixture, either on Thanksgiving Day or some date a little earlier. With ordinary good luck in the matter of weather, the location and the reputation of the Automobile Club of New Jersey for hospitality and sporting spirit, will make the event a feature of the motoring year.



PRIZE-WINNING LOCOMOBILE RUNABOUT AND W. J. STEWART.

## How to Pronounce the Names of Foreign Built Machines.

While it is always possible to use a vernacular term and sound instead of one borrowed from French for expressing an idea connected with automobilism, the proper names designating imported machines present difficulties that cannot be circumvented so easily. Some pronunciation must be devised which comes close enough to the foreign sound to be recognized and close enough to the spelling, as interpreted by the average New Yorker, to be practical.

In alphabetical order these names are as follows:

**Benz;** the name for a certain manufacture at Mannheim, Germany, conducted by Carl Benz, a contemporary of Gottlieb Daimler, who built his first machine in 1886. Belt transmission is the characteristic feature. The name is also applied to other vehicles, as "built on the Benz system." It should be pronounced as if spelled Bentz.

**Charron, Girardot et Voigt;** this name applies to a machine imported from France and also to one made in duplication of it at Rome, N. Y. It is nearly always styled the C., G. & V. car, as this use of the initials happily disposes of the obstreperous sounds. The full name may be rendered: Shar-rong, Shee-r-ar-do eh Vugt. The rong should be said with flared lips and nasal sound; the ee in shee is short and the r following it seems to belong equally to both syllables. Commonly and is substituted for eh, meaning the same. The Voigt is no more French than it is English and receives a compromise sound in both languages.

### A WELL KNOWN NAME.

**Darracq;** this well-known name gives no trouble. Both syllables should come out nearly equally strong. Usually too much stress is put on the racq.

**Daimler;** applies to machines built under the patents granted Gottlieb Daimler and his successors, whether the manufacture is located in Germany, Austria, Italy, England or the United States. The German pronunciation is Dime-lr, the vowel sound in lr being the same as the first sound in bury or merry, but the word has become internationalized and is much oftener spoken Dame-ler than any other way.

**De Dion et Bouton;** the little gray man, Mr. Bouton, who has so faithfully helped to build a reputation for Marquis De Dion, is snubbed in our manner of mentioning the firm and its products. De Dee-on is the accepted abbreviation. Some say Dir Dee-on, others Dee (short sound) Dee-on. Dir D-yong would be nearly the correct French sound, though the r in Dir should be bitten in two, pronouncing only the first portion. The

tongue lingers a little on the D, making it almost a separate syllable and the yong is enunciated with flared lips and nasal sound. The same applies to all *on* sounds in French when at the end of a word. The full firm name would be Dir D-yong eh Boo-tong.

### AN UNFAMILIAR NAME.

**Decauville;** this car, which is comparatively new in the United States, has usually been styled the Dekkivil, and this is perhaps near enough to pass muster. Dir-co-veel, last syllable short but not slurred, would be better.

**Delahaye;** imports of this car are under consideration. The name is Dir-la-a, the r in Dir simply indicating the vowel sound as in other cases; the a in la open and short; the final a the English alphabetical sound.

**Georges Richard;** is pronounced George Ree-sharr, the given name in English and the patronymic in French style. To take the step in full we should say Shorsh Ree-sharr, the ee in Ree short and sharp.

**Gillet-Forest;** two of these cars which have been prominent in the fuel consumption and alcohol tests in France, have been doing good work in Indianapolis. The writer does not know how the Hoosiers say the name, but it should be Shil-leh Fo-r-eh, the r again apparently belonging to both syllables.

### OF SPANISH ORIGIN.

**Mercedes;** the name of one style of Daimler car, made at Cannstatt, Wuerttemberg, Germany. The popular characteristic of the style is the square front, honeycomb radiator—multi-tubular radiator is the patent name—by which the amount cooling water is very much reduced. It has a fan attachment, either separately or on the flywheel. The word Mercedes is now used to indicate the adoption of these features on cars which are otherwise not of Mercedes construction. New York usually says Mer'-ce-dees, with the accent mainly on the Mer. The word is Spanish rather than German and should be spoken Mr-ceh-dess, with the accent on the ceh. The Mr is pronounced almost as the first portion of merry, though the r is different.

**Marienfelder;** the name of a car made at Marienfelde, Belgium, resembling the Mercedes-Daimler in the motor and the Panhard in gear mechanism. The best pronunciation is Mar-ee-en-fel-dr, the emphasis on the ee.

**Mors is Mors,** same as in Paris.

**Morisse;** a car of which two have been imported, some say because it was thought that the name would be sounded similar to Mors and would help to sell them, should be known as Mo-reess, the ee short and sharp.

**Peugeot;** it was hard to devise an English sound for this spelling, so the French of it has been quite generally learned; it is Pur-sho, but the r is swallowed as in other similar cases.

**Panhard et Levassor;** by common consent Levassor has been dropped out of this familiar name, even though he was the man who made the machine famous in the first place. Panhard alone is considered sufficient and the word is spoken exactly as if it were English. Pan-arr eh Lir-vas-sor, with the r in Lir slurred, is the foreign style.

**Renault;** for this word Ren-o is the usual pronunciation. Rur-naw (r slurred) would be more correct.

**Rochet-Schneider** is practically always pronounced Ro-sheh Shnider.

**Serpellet** is given the English sound, accent on first syllable, but should be Sr-pol-leh.

### Aid for National Highway.

Colonel John Jacob Astor has offered to subscribe \$10,000 to the New York-Chicago Road Association to aid it in the construction of the national highway, on the condition that the proposed route be altered so as to run on the east bank of the Hudson River instead of on the west. He believes a greater number of persons may be benefited by an east shore highway than by one along the other bank. The eastern side being much thicker settled with wealthy New Yorkers, who would be glad to contribute to the construction of a road that would so greatly benefit them.

The route he proposes is along the bank of the Hudson to Rhinebeck, and there crossing to Kingston. From that city, the road would follow the course originally planned, through Binghamton, Elmira, Corning and Jamestown to Erie. Thence, it would run through the cities of Ashtabula, Cleveland, Elyria and Toledo, in Ohio, Goshen, Elkhart, La Porte and Valparaiso, in Indiana, to Chicago.

When the A. C. A. meeting was held on the evening of the day Mr. Astor made his offer, Albert R. Shattuck, president of the club, said that the officials of the State of New York had made promises of their aid in furthering the cause of this highway. Something more than promises, he declared, had been secured by the good roads agitators in New Jersey and Massachusetts. He still had hopes that something more definite would be apparent before the close of the next meeting of the New York Assembly. It was suggested that the national government might be persuaded to appropriate \$2,000,000 for building a series of 40-mile stretches in each of the five districts on the route of the New York-San Francisco highway, which it is the hope of the Association to have built eventually.



## American Woman's European Tour.

### Mrs. J. B. Gibson Completes a 4,000-Mile Trip and Comments on Foreign Deference and Methods.

One of the most notable European tours of the past summer and fall, if not in the history of automobiling, is one of 4,000 miles through France, Germany, Belgium, Switzerland and Italy, made by Madame J. B. Gibson, of New York. Starting in August from Paris, where she bought the handsome and luxurious 16 horse power Panhard, with folding top and glass front, shown in the accompanying illustration, she made the sojourn through the countries named, accompanied only by an American mechanic, and returned home with the car early in November, arriving on the Oceanic the second week of the month. Since arriv-

been consulting a road map in the hope of finding a roundabout way of returning to New York City in order to avoid re-crossing the meadows over the Turnpike Road.

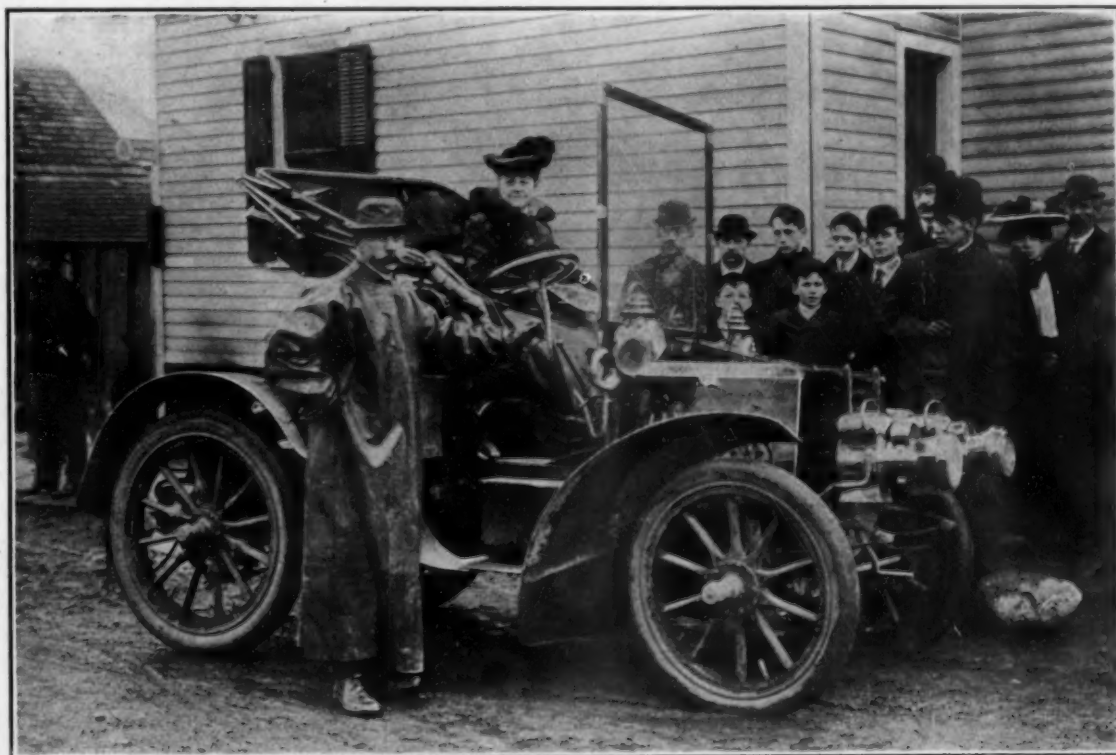
Both were enthusiastic over the pleasures experienced upon the European tour and regarding the excellent performance of the Panhard car. No trouble or breakdowns with the machine had occurred during all of the 4,000 miles, they stated, and they had had but one puncture to the Michelin tires. They had been especially impressed throughout with the respect and deference accorded to motor tourists in Europe, where the contrast with the

tion of trying to induce Parliament to adopt it in whole or in part for the British Isles.

Mrs. Gibson, in thus traveling throughout Europe in her own machine, accompanied only by her mechanic, has set a precedent for independent American women, which lovers of the sport could well wish to see emulated, not only in Europe, but in the United States as well.

#### King Leopold's Road Project.

King Leopold of Belgium always keeps his eyes open to the main chance for his country as well as for his personal exchequer. For some time he has desired to have good automobile roads to the watering places in his Kingdom, so as to secure the patronage of the motoring classes for them. His project to connect Paris and Ostend by a model automobile road was considered a daring one a year ago, but



MRS. J. B. GIBSON IN COVERED PANHARD IN WHICH SHE TOURED EUROPE.

ing in New York, she has toured through the Catskill Mountains to Montreal and back.

The unusual interest taken in all automobile matters by Mrs. Gibson and by her operator, was impressively demonstrated on Thanksgiving Day, when they drove from New York over the muddy Turnpike Road across the Jersey Meadows through a cold and disagreeable drizzle, to watch the performance of the American motor vehicles in the Eagle Rock hill-climbing contest. It was at the starting point of this event, after the conclusion of the trials, that the photograph herewith reproduced was taken. At the time, Mrs. Gibson and her mechanic had

persecution by officious and over-zealous minions of the law and of Young America in the United States, is most pronounced. In Germany, especially, is the lot of the automobilist made easy and pleasant. No duties were exacted there, not even a deposit to be returned upon crossing the border outward bound. Neither were they required to register the machine nor to carry initials or numbers upon it for identification. The German system is to impose no burdensome red tape upon tourists, but to hold them fully responsible for any accidents or damages that they may cause. So simple and practical is this method, that English motorists are said to be investigating into it with the inten-

since then the Belgian portion of this project has been quietly realized by substituting a high grade of macadam for the granite pavement between Ostend and Dunkergue. Another section from Furnes to Menin by Ypres is under work and will be finished by July, 1903. As soon as a short stretch of rough road in northern France shall have been improved, there will actually be a continuous stretch of fine macadam from Paris to Ostend.

In West Africa hundreds of miles of new roadway are being built especially for motor car traffic, and the new highways built in Madagascar are also especially adapted for automobiles.

## Auto Information for the Novice—II.

### Advantages of the New Form of Private Conveyance Over the Horse Drawn Vehicle—Suggestions for Intending Purchasers.

BY W. P. STEPHENS.

#### AMERICAN STEAM CARRIAGE—PART I.

The steam car of to-day, in its perfected form, includes the same essential elements which were found in the first experimental carriages of about the year 1770, the comparatively successful motor coaches which, about 1830, promised such a rapid development until all progress was stopped by hostile legislation, and the experimental cars which, some thirty years ago, inaugurated the era of the horseless and trackless vehicle. In all of these alike are found the closed receptacle in which water is converted into steam, the furnace or burner which supplies the necessary heat, and the closed cylinder whose movable piston is driven alternately from end to end by the force of the vapor. Curiously enough, the prevailing type of steam car follows very closely the line of marine rather than of stationary or locomotive engineering. The engine is of the launch type, with link motion for working the steam expansively and for reversing, the majority of carriage boilers are of the cylindrical fire-tube type that has long been the standard in marine work, and the fuel is oil instead of coal, in the line of development now being vigorously prosecuted by marine engineers. While some very successful departures from established lines have been made, as in the Serpollet cars abroad and the White in this country, and while development on new lines is still to be expected, the great majority of steam cars to-day employ the same general type of plant.

#### GASOLINE THE FUEL.

The one fuel in use in American steam cars is gasoline; coal or coke are used to a limited extent in the heavy trucks, and experiments without number for the successful employment of kerosene and heavier oils are under way, but in actual practice gasoline enjoys the same monopoly as in the case of the explosion motor of the so-called "gasoline car." The advantages of liquid fuel over coal or coke in point of cleanliness and of convenience in storing and feeding are readily apparent, and real progress with the steam car only began with the abandonment of coal and the adoption of oil; of all hydro-carbon products gasoline, being easily vaporized and leaving little residuum, has thus far proved the most efficient and economical. While the practicable kerosene burner is greatly to be desired for various reasons, gasoline has

established itself on its merits as a practicable fuel for steam cars.

The gasoline is carried in a strongly-built cylindrical tank of drawn steel, of 6 to 9 gallons capacity, hung under the front part of the body. The tank is filled through a screw plug and has two pipes, one carrying the gasoline to the burner,



TYPICAL STEAM RUNABOUT.

the other connecting with an air tank. This latter, smaller in size, but also strongly built, is usually placed under the front seat, with pipe connection to a small steam and air pump, by which a pressure of 40 to 50 pounds is maintained, which forces the fuel to the burner.

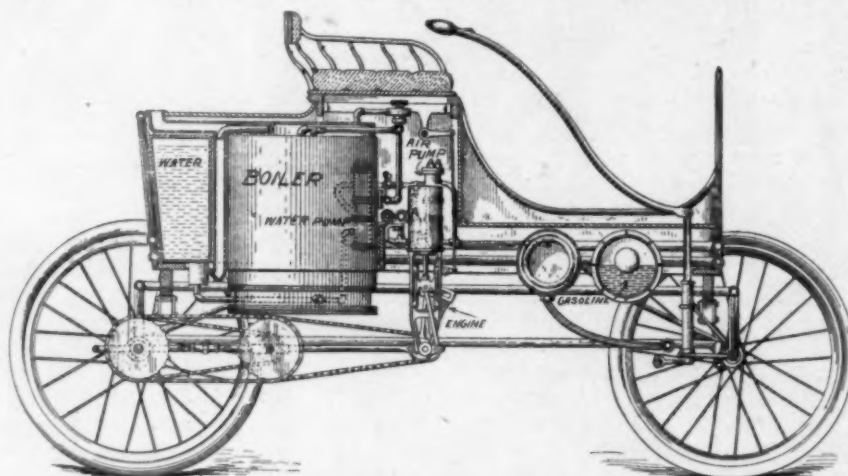
The water is carried in a copper tank,

25 miles, or considerably further under favorable conditions. The tank is filled from a screw cap opening on top and also by a steam siphon and hose by which water may be drawn from a brook or other low level.

#### CONSTRUCTION OF THE BOILER.

The boiler is a cylindrical shell of copper or steel, with steel heads pierced for copper tubes of about  $\frac{1}{2}$  inch in diameter and 300 to 400 in number, the heat from the burner passing through them; the boilers of the ordinary steam runabouts range from 14 to 16 inches in diameter and about 13 inches long. Where copper is used in place of steel for the shell, it is reinforced by a fine piano wire wound around it. The boiler is always placed vertically, with the tubes running from bottom to top; immediately below it, at a distance of two to three inches, is the burner. This, in its most common form, is a disk resembling a very short section of the boiler, a circular rim of the same diameter as the boiler, uniting two flat heads spaced a little over an inch apart, and pierced for about a hundred half-inch tubes, the air from below passing up through these tubes to the fire. The gasoline pipe from the tank is run over the boiler and through the tubes in such a way as to heat the gasoline and convert it into vapor, which is mixed with air in entering the interior of the burner. This gas escapes through the upper head of the burner by means of many very small holes drilled around each of the air tubes, being thus mixed with a fresh quantity of air and burning just above the top of the burner and under the tubes of the boiler.

The products of combustion, after passing up through the boiler tubes, are carried off in such a manner as to aid in heating the water in the surrounding tank before being thrown into the atmosphere. Another form of construction which has



VERTICAL SECTION SHOWING ARRANGEMENT OF POWER PLANT.

which fills the rear part of the carriage body and partly surrounds the boiler, which is placed about under the seat. The average capacity of the tank is from 25 to 30 gallons, enough for a run of 20 to

given good results has a number of tubes of about one inch in diameter arranged side by side, the upper side of each tube being pierced by many small holes through which the vapor issues, while the



fresh air reaches the fire through the spaces between the tubes.

Some special appliance is necessary to

vaporization goes on automatically under the control of what is called the "automatic regulator," by which the supply of

which the regulator is set. As the pressure falls the valve of the regulator opens and renews the supply of fuel. A small independent flame, called a "pilot light," is kept burning constantly near the vaporizer, by which the burner is relighted after being extinguished on stopping for any length of time.

#### THE STEAM ENGINE.

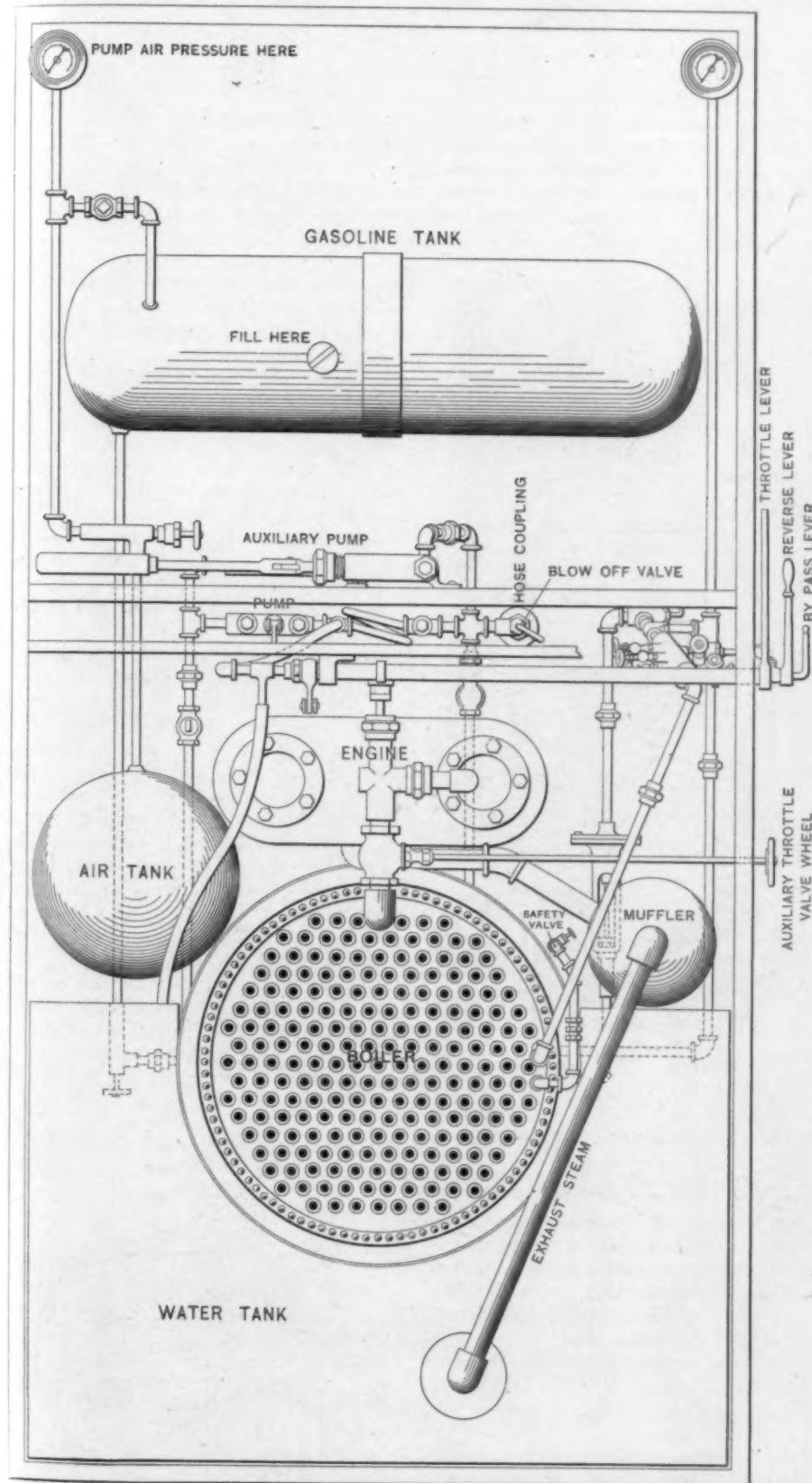
The engine generally used in motor cars has two cylinders, about  $2\frac{1}{2}$  inches diameter by  $3\frac{1}{2}$  inches stroke, hung vertically, with the shaft and connecting rods beneath; the Stephenson valve motion, with eccentrics and links, being used for varying the amount of steam admitted to the cylinders and reversing. As already mentioned, the general arrangement is similar to the steam engines in use for many years past in launches. The construction of the engine must be of the best, phosphor bronze is used freely, and ball-bearings are quite common, but the general design is plain and simple, with no elaborate details. Occasionally, a greater number of cylinders is used and the cylinders are compounded, but the great majority are simple. Ample provision for lubrication while running is necessary, by means of feed-cups on the cylinders and special lubricators forcing the oil to all parts.

The crank-shaft carries a sprocket-wheel in line with a larger sprocket mounted on the differential on the rear axle, and the two are connected by a chain. An iron rod, with one end threaded, or some similar device, regulates the distance of the crank-shaft from the axle and keeps the proper tension on the chain.

#### MINOR MECHANICAL FITTINGS.

All the usual appurtenances of the stationary steam engine are found in miniature, the boiler is fitted with a safety valve, usually set to blow off at about 225 pounds. A small feed-pump driven from the crosshead of the engine keeps the water at the required height, a gauge-glass just outside the body shows this height to the operator, and a steam gauge on the dash in front shows the pressure at all times. An auxiliary pump, worked by hand, serves to fill the boiler in the first place, or to keep up the supply if the feed-pump fails. The throttle-valve, admitting steam from the boiler to the engine, is operated by means of a short lever on the side of the carriage, within reach of one hand, while the other holds the steering lever. In connection with the pipe from the pump supplying the boiler, a "by-pass" is fitted, a valve which closes the passage to the boiler and opens one to the tank; so that when the water in the boiler has been raised to the proper level, the excess is merely turned back to the tank.

In order to provide a supply of dry steam to the engine, some provision is made for "super-heating" the steam after it leaves the boiler, the steam pipe



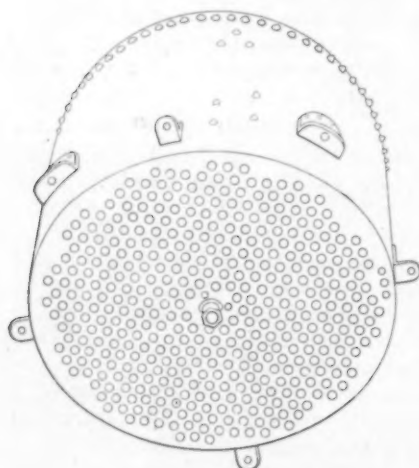
Copyright by Locomobile Co. of America.

PLAN OF POWER PLANT OF TYPICAL STEAM CARRIAGE.

vaporize the gasoline in the first place, as the clear liquid cannot be burned in the burner; but when all parts are heated the

gasoline is cut off from the burner as soon as the boiler pressure exceeds a certain point—180 pounds, for instance—at

running down and passing in a coil around the boiler and then up through the boiler. A "feed-water heater" is also

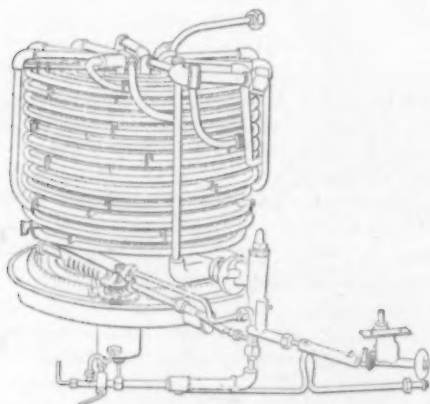


FIRE TUBE BOILER.

used, serving the double purpose of heating the water in the tank before it passes into the boiler, and also of deadening the force and sound of the exhaust steam. The pipe between the tank and the boiler is arranged in a coil within a closed cylinder, to which the exhaust steam is admitted, thus heating the water.

#### OTHER FORMS OF BOILER.

Two other forms of boiler, the "water-tube" and the "flash," are also used in motor cars, the former in particular in the heavy drays and trucks. In the "water-tube" boiler, as its name indicates, the water passes through the tubes, while the fire surrounds them. In the particular type of water-tube boiler most common in motor car engineering, the tubes or pipes are in the form of spiral coils. In some cases, these coils are placed within the main shell, thus being surrounded by a jacket of water which is also heated by the fire within it and about the tubes. In other forms, the spirals are arranged about a central column, which serves as

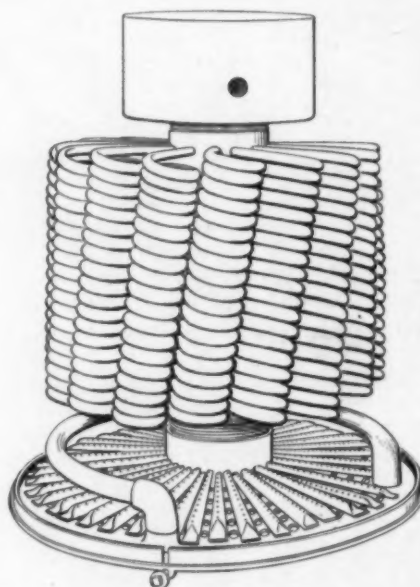


SEMI-FLASH STEAM GENERATOR.

the main reservoir, the whole being surrounded by an outer coil of large pipe.

The "flash" boiler is a special form of

"water-tube" boiler, with the pipe system elaborated and the water reservoir omitted; the pipe is of very small internal diameter, about  $\frac{1}{4}$  inch, and though a great length of pipe is used in the various coils, they will contain very little water. As every part of the coils is subjected to an intense flame, the water is heated on first entering, and is almost immediately converted into steam, with no intermediate process of comparatively slow boiling, as in the ordinary steam boiler. One feature of this system, best exemplified in the Serpollet car, is the feeding of the water in measured quantities, according to the work imposed on the engine, by the pump; this water being instantly converted into steam and passed to the cylinders. There is no reserve of either steam or water, but the steam is made instantly as required, and as soon as the engine stops the boiler becomes dead and practically empty. The White boiler, so well known in this country, is termed by



WATER TUBE BOILER.

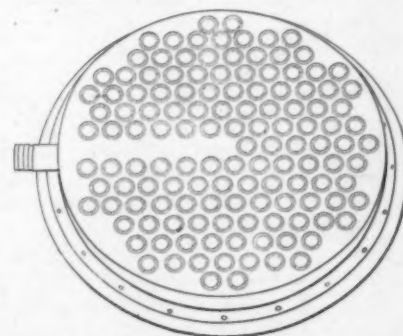
its maker a "semi-flash" boiler, working on the principle above described.

#### Will Use Alcohol.

The Congo Free State Government has found that railway construction in an undeveloped country is such a costly and unprofitable enterprise that it is building roads specially for automobile traffic, and is erecting distilleries along the route to provide the vehicles with fuel. The cars are being purchased in Belgium, and the first lot has recently been shipped to Africa.

In Portuguese Africa the plantation owners, a hundred miles or more away from any transport facilities, are employing motor wagons, which they find are much more economical than native labor, simply because the fuel costs them practically nothing. In these countries the ob-

jections to alcohol do not exist in the same degree as on the Continent, where the spirit has to be denaturized with methylene, but

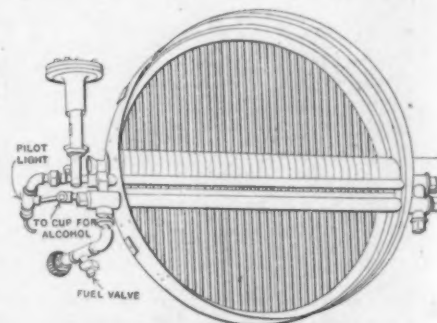


TYPICAL BURNER—VERTICAL TUBES.

even in France, where a high percentage of methylene has to be mixed with the spirit, it is hoped that the difficulty will soon be overcome by the discovery of some more suitable ingredient, though it must be confessed that the researches so far have not been attended with any success.

Some months ago the French Government offered a big prize for some new denaturizing ingredient which would not necessitate such frequent cleaning and grinding of valves, and now it is stated that further official experiments will be carried out shortly. The matter is such an important one from the point of view of Continental agriculture that the problem will have to be solved in one way or another, when the use of petrol will come to be looked upon as an expensive luxury. Whether this will take place in the more or less distant future, it is difficult to say. In course of time, however, the alcohol motor is certain to come into increasing employment, not only on the Continent, but also in South American and other countries which are capable of producing their own spirit, and it is for this reason that the manufacturer who looks to a foreign trade will find it necessary to keep in touch with the progress being made in the designing of motors for the use of this spirit.—*The Autocar*.

Through the efforts of Congressman Brownlow, the government will experi-



SPECIAL BURNER—HORIZONTAL TUBES.

ment in Tennessee with the motor vehicle for the delivery of mail in the rural districts.



## Skinner's Run of 488 Miles in Thirty-Five Hours.

*Special Correspondence.*

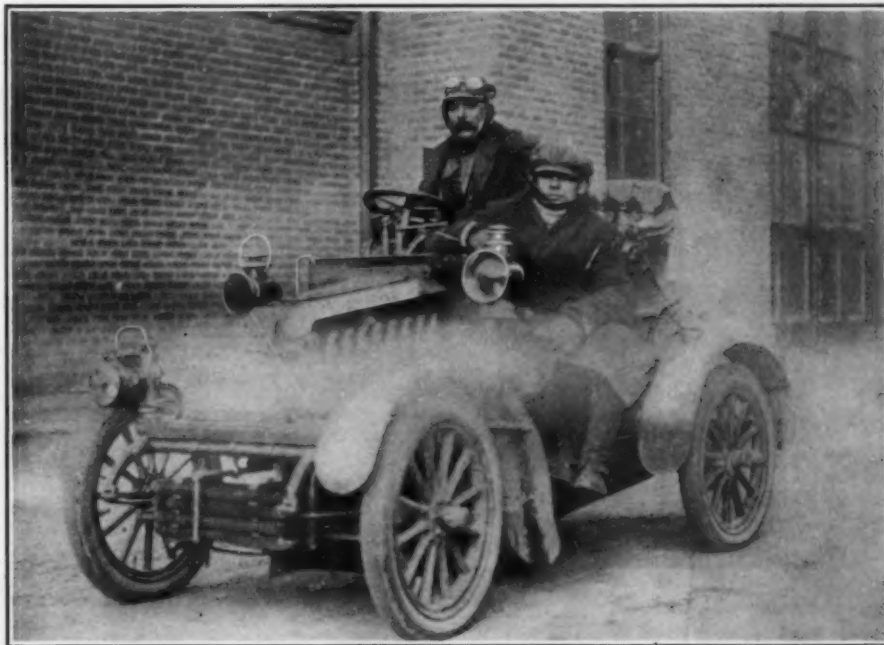
BOSTON, Nov. 29.—Kenneth A. Skinner's latest run from this city to New York and return in less than a day and a half, was an endurance test for the man even more than for the machine. Part of it was a constant struggle to keep from falling asleep while steering and operating the vehicle. The accomplishment of the whole distance over the Automobile Club of America's route by way of Worcester, Springfield, Hartford and New Haven, 488 miles, was a feat of considerable interest, as Mr. Skinner finished it in 34 hours 52 minutes, including the time spent in New York City.

### RUNNING TIMES CERTIFIED.

He started, with Albert Champion for assistant, from the Hotel Thorndike, Boylston Street, Boston, at 3:08 A. M., on Friday, November 21. His time was taken by the manager of the Harvard Automobile station in Hartford, Conn., Friday forenoon at 10:40 o'clock; and by Secretary Butler, at the Automobile Club of America, New York City, at 5:30 P. M. Friday. Messrs. Skinner and Champion stopped only long enough to freshen up a bit, and to order and eat a juicy beefsteak; then at 8 P. M. started on the return trip from the Barry & Hayes garage, Fifty-eighth Street and Madison Avenue. They made slower time on the run back to Boston, but drew up at Automobile Headquarters, Stanhope Street, at 2 P. M. on Saturday, when their time was certified to by Mr. Underhill, one of the firm there.

The pair were a sight when they finished. Their machine was in good condition, but the men themselves were very

York trip was 14 hours 22 minutes; that for the New York-Boston trip, 18 hours. These times, with the two hours and a half spent in New York City, give the total elapsed time, Boston to Boston, 34 hours 52 minutes. The machine in which the run was made was Mr. Skinner's 8 horse power DeDion gasoline car, 1902 pattern, which had been stripped of its tonneau back, but carried extra weight enough to make up for this reduction. The tanks held eight gallons of gasoline



SKINNER AND CHAMPION DURING THIRTY-FIVE HOUR RUN.

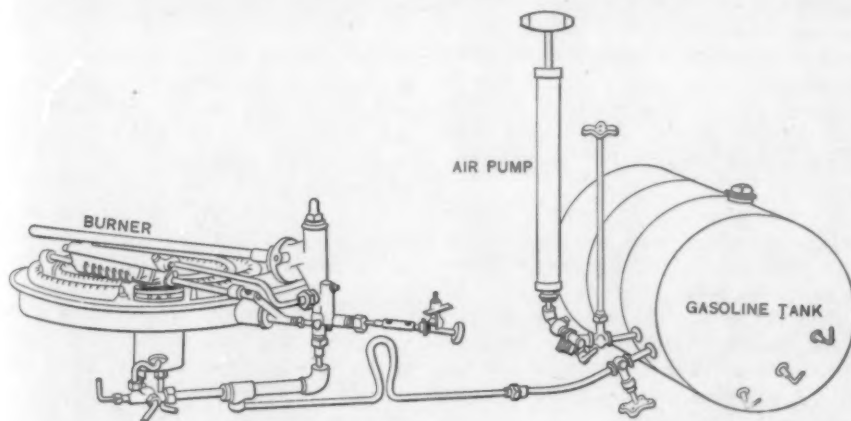
ner's 8 horse power DeDion gasoline car, 1902 pattern, which had been stripped of its tonneau back, but carried extra weight enough to make up for this reduction. The tanks held eight gallons of gasoline

Saturday forenoon found some New York machines all decorated with flags on their way from that city to the game.

"There were no incidents worth mentioning on the run over, except that our acetylene lamps gave a good deal of trouble. We didn't dare to run without the lamps, and the oil lamps were of little use, so we had to stop to fix the acetylene more than once. The lamps delayed us a good deal on the way home, too.

### HARD TO KEEP AWAKE.

"The worst part of the run was after we had started from New York on the return trip. When we thought of the long stretch of road ahead of us, and that we would have to dig away at it all night and half the next day, with no time to rest up, we wanted to weaken. But we had undertaken to finish the round trip in quick time, and we stuck to it. We found that keeping awake was about the hardest thing we had to do. That long Friday night was something 'fierce.' Some of the way we took turns running the machine, while the man off duty ran along beside in order to rouse himself. The pace was a good deal slower than on the way over, for it was hard to see. We had heavy fog



FUEL AND BURNER SYSTEM OF STEAM CARRIAGE—See page 6.

much the worse for wear, and their faces were drawn and wrinkled from lack of sleep and lined with dust and grime until they looked like the faces of octogenarians. The elapsed time for the Boston-New

and one of water when the machine pulled away from the Thorndike Friday morning.

"The machine ran in beautiful style," said Mr. Skinner to your representative,

all night long. Going under the overhead railroad bridges I was fooled more than once by the look of the bridge as we came up toward it. The appearance was like a solid wall, and two or three times I expected for a moment to feel the machine smash against the stone work; but there was always a hole to get through, and we got along without running into anything.

#### SEVEN MILES ON WRONG ROAD.

"Between Wallingford and Meriden we managed to get off our route. We took the left fork where the road branches near the railroad bridge there, instead of the right one, and the result was that we ran about seven miles off our course, and had to retrace these miles before we could get straightened out. We were misled because the wrong road at that fork seems for some distance a better surface than the other, but to go wrong there takes you up into the back country, and your only way of getting on your course again is to go back to Wallingford. I suppose it was only the black coffee we drank that night that enabled us to keep awake. We drank a lot of it. We had nothing to eat, of course, except what we brought with us, because we didn't want to take the time to stop.

"We were lucky in having no tire troubles. When we got in at Boston, the tires appeared to be all right. But Sunday when I looked over the machine I found both rear tires flat. There was a horseshoe nail in one, and a suspender buckle embedded in the other. The rubber was good, or they would have let the air out on the road."

#### KEPT NO RECORD OF STOPS.

To a question as to whether he took any figures as to actual running time, Mr. Skinner replied:

"No, I took none at all, only those for the elapsed time. The reason was this: The elapsed time was all that I could have properly certified; I couldn't have proved the running time to everybody's satisfaction. It would have been easy to say that we took so much time here for fussing with the lamps, and so much time there for oiling the motor, or something else; but there would have been no proof of the correctness; so what was the use? The elapsed time tells the story. Witnesses know when we left Boston and when we got back; and other witnesses can vouch for the times of arriving at and leaving New York. And that is all there is to. We had to cover the distance in order to get these certifications."

Mr. Skinner had his time certified to in a small book which he carried through the run.

The Ford-Cooper racing machine has been dubbed the "999," borrowing the number of the New York Central locomotive, which has a record of a mile in 32 seconds.

## Foreign

### PARIS FOLLOWS OUR LEAD IN MASS PRODUCTION.

#### 2000 "POPULAR" DE DION CARS.

**Jigs and Templets Take the Place of Manual Skill in Foremost French Factories—Clever New Features in \$800 Machines—Darracq Adds to Horsepower of His Popular Model.**

*Staff Correspondence.*

PARIS, NOV. 15.—In my last letter I referred briefly to the new "popular" models of Darracq and De Dion-Bouton vehicles which will be seen at the show next month. When your special representative shall have arrived here and shall have seen these cars, you will wish to know more about them. For they certainly represent a certain democracy in automobilism which is new to us, though some of your American cars which I have seen in London convince me that it is more familiar on your side of the Atlantic.

In order to realize the dream of a stylish vehicle at low price, the De Dion-Bouton firm saw the need of figuring on an enormous production of a single pattern—quite American, as you see—indeed, on a series of nearly 2,000 of these 6 horse power, single cylinder cars. An investment of about 6 million francs! A risk which only an old and well-established house could assume! For you will see from the illustration that there is question here of an essentially new design, though one in which the various mechanical elements have been well tried in other forms.

#### PRICE, WEIGHT AND MECHANISM.

The price at present is 3,900 francs, or in your money nearly \$800. With a good profit to your agents and a better one to your Government, perhaps you may have these cars in New York for \$1,500. But, as you may imagine, deliveries cannot be expected very early, as none will be made here until after the show. Still I hear it whispered that your agents have in some cases obtained priority over French consumers—paying liberally for the privilege, no doubt.

This vehicle weighs 750 pounds, carries 3 gallons of cooling water in a tank secured to the front guards, and 4 gallons of gasoline under the seat. It reaches a speed of 28 miles per hour. The motor is vertical, 90 mm. diameter, 110 mm. stroke, developing about 6 horse power at 1,550 revolutions. A gear-driven centrifugal pump circulates the cooling water.

Power is transmitted from the motor by a long bevel-gear shaft quite susceptible of torsion and moreover fitted with a square-bore telescoping sleeve that allows the shaft to lengthen or shorten while continuing to drive. The change-gear mechanism and the differential are enclosed in

the same oil-tight box. The differential, by the way, is of the straight spur-gear variety, adopted by the De Dion-Bouton firm some time ago, but which I believe was originated in the United States. The two shafts of the sliding gear mechanism are mounted on ball-bearings. Only two speeds and a reverse are employed in this type of car, but it will interest you to know that in the larger 9 horse power type the manufacturers contrive to operate three speeds on shafts of the same length and in a box of the same dimensions. Simplification of manufacture and reduction of price go hand in hand! The driving axle is fitted with cardan joints as in this year's models, and supports no weight.

#### INCLINED STEERING COLUMN BRACED.

In the mechanism for operating this car you will notice at first glance that the inclined steering column is braced by two vertical tubes, which neutralize the disagreeable vibration of the hand-wheel so plainly in evidence in many machines, and perhaps the only vice of the inclined steering system. These tubes serve also as conduits for transmitting the operating motions below the floor of the car. The lever at the top of the tube on the left side controls the gears. Drawn toward the driver it gives the low speed. In the central position it disconnects the motor, and pushed ahead it gives the high speed. The smaller lever on the other tube, at the top, controls the time of the spark; the one below it the composition of the explosive mixture.

On the steering column will be seen the throttle lever which co-operates with the pedal, as in previous models. The pedal is operated by the left foot. Slightly depressed it throttles the motor, as said, and pushed still more it actuates a double-acting block brake pulley mounted on the front end of the shaft which carries the small bevel gear driving pinion. A band brake on the rear wheels is actuated by the large lever on the right side of the vehicle.

#### DARRACQ'S NEW 12 H.-P. MODEL.

The changes in the "popular" Darracq are not so pronounced a departure from its maker's previous designs. The new model is a 12 horse power car with a two cylinder motor and is intended for the same class of purchasers who last year preferred the 9 horse power single cylinder car to the more powerful but less comfortable 16 horse power machine. The frame is no longer constructed of tubing, but of armored hickory wood. The carriage springs are extra long and supple. The highest of the three gear speeds drives direct. The radiator may be detached by simply unscrewing two bolts. The whole complex of the motor, the circulating pump, the carbureter and the electric ignition apparatus, may be removed by the detachment of four bolts and without interfering with any other portion of the car. The whole car weighs 1,500 pounds and shows a notable gain in simplicity over earlier models.



## RACE BY TEAMS OF FOUR ADOPTED BY FRENCH CLUB.

### STAGES AND BUSES IN CONTEST.

**Strong Tendency to Build Business Automobiles Checked Only by Public's Demand for Pleasure Cars—Long Distance Races Admitted to Be Mainly for Commercial Purposes.**

#### *Special Correspondence.*

PARIS, Nov. 20.—To-day commences the contest organized by the Automobile Club for delivery vehicles, stages and omnibuses intended for city and suburban service. The trials will be continued for one week and are international in character, being open for vehicles from any country. The competition will be judged on the following points: 1, The daily cost of

both light and heavy, but especially the latter, and our most important progress in scientific motor construction is due to their efforts. I need only mention such firms as Bardon, Georges Richard, Brouhot & Co., Turgan-Foy, Gillet-Forest. De Dion & Bouton have always produced heavy utility vehicles, as well as light pleasure vehicles, and if those manufacturers whose names have become celebrated through racing victories are still devoting their facilities for production to pleasure cars exclusively, it is that they have no choice, being so crowded with orders for this class of automobiles that it is physically impossible for them to divert any portion of their energies in another direction.

It cannot be said that the popular interest in business vehicle contests is very

qualities of the competing machines. Why not, then, asks the Marquis, adopt a commercial system which will really serve this purpose by showing not only the speed of the vehicles, but also their durability and uniformity of workmanship? He proposed that five vehicles should be entered by each manufacturer, but the sport committee of the club cut this down to four.

The idea is, of course, to remove the element of chance as much as possible and encourage manufacturers to build so substantially that they may be reasonably sure that all of their four entries will finish the course. The awards will be made on the total performance of the *équipe*. If any one of the vehicles drops out, say 200 kilometers from the goal, after traveling for, say, 15 hours, its time will be figured by adding one hour for each 10 kilometers that remain to the time actually elapsed when the vehicle was stalled; in this supposed case 20 hours, making the total time 15 hours plus 20 hours, or 35 hours. The other vehicles of the same *équipe* or team may finish the course in, say, 18 hours, 19 hours and 20 hours. The total for the team would be 92 hours, and the team would be beaten by another team making an average of over 22 hours, but of which all the vehicles would finish. It is one of the objects of the sport committee by this arrangement to give the contestants an incentive to finish the race even if they meet a mishap which causes serious delay, and not merely drop out as in all previous events, as soon as the chances for first honors slip away from them.

The sport will not suffer by this arrangement, for the man and the vehicle who come in first will gain the popular honors, even if the failure of others in his team should deprive him of the official awards.

#### Latest Contest in Paris.

The automobiles participating in the tests conducted by the Automobile Club of France for business vehicles of all kinds from November 20 to 26, were divided into two main sections: Those intended for service in the city and those meant for suburban service. City vehicles were further classified as follows: 1, Vehicles for two or four passengers without baggage, either open or closed, or capable of being opened or closed at option; 2, wagonettes for four passengers, with baggage not exceeding 176 pounds for each; 3, wagonettes for six passengers, with baggage up to 66 pounds for each; 4, delivery wagons of a capacity of 1,100 to 1,650 pounds of useful load, and with a place for the delivery man; 5, delivery wagons of 660 to 1,100 pounds capacity, also with a place for an attendant (besides the driver); 6, three-wheeled vehicles capable of carrying at least 220 pounds of useful load, the driver to act as attendant also.



THE "POPULAR" SIX HORSE-POWER DE DION—See text opposite page.

running the vehicle under its ordinary conditions of service over a route of 60 kilometers (37.16 miles) comprising an average quota of grades and inequalities of road surface; 2, the comfort and manageability of the vehicle; 3, the frequency of renewals of supplies; 4, the price of the vehicle.

This is only one of the many events which have been promoted in France during the past eighteen months with a view to the development of automobiles for strictly business use, and I call your special attention to it because observe a certain tendency in your press to look upon the French automobile industry as solely engaged in the production of fast vehicles for sport and pleasure. Nothing could be farther from the truth. A number of very substantial firms are giving almost exclusive attention to business automobiles,

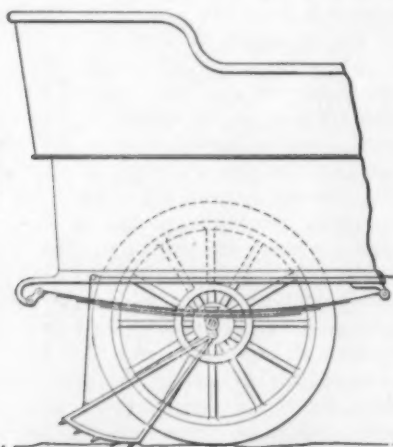
strong as yet, and I dare say that only a handful of people will witness the opening of the one that takes place to-day, aside from the manufacturers, club officials and newspaper men, who all have a business interest to attend to. Actually the rank and file of automobilists are thinking more of the Nice festival in March and April and the Paris-Madrid or Madrid-Paris race in July of next year, than of all the important work embodied in a trial of business wagons.

The club has now practically decided to run the Paris-Madrid race *par équipes*, that is, in teams of four vehicles from each manufacturer. Marquis De Dion handed in resolutions at the last executive meeting in which it was fully acknowledged that the main purpose of long distance races is the commercial one of making intending purchasers acquainted with the

The suburban vehicles were classified in: 1, omnibuses for ten passengers with baggage not exceeding 66 pounds for each; 2, delivery wagons of a capacity of 1,650 pounds, and with a place for an attendant; 3, trucks of at least one ton's capacity.

#### Sprags on Automobiles.

The use of sprags for permitting cars to stop on hills without applying the brake and as a special precaution against back-sliding is rather common in England, though perhaps not so common now as when double-acting brakes were less reliable. The *Autocar* illustrates the new design of sprag shown herewith. The curva-



NEW TYPE OF SPRAG.

ture of the sole-piece of this device causes a gradually increasing resistance to backward motion of the vehicle, thereby avoiding the shock usually felt when a gasoline car falls back on a hill through the failure of the driver to change his gear in time. The sole-piece is two inches wide, enabling the sprag to hold on soft ground. Sprags are sometimes fitted to American steam cars intended for export so as to comply with the legal foreign brake requirements.

#### Triple Technical Lexicon.

We have received the first of three small books that promise to be very useful to all engaged in the automobile industry, a triple lexicon of technical terms in French, German and English. The book, which is compiled by W. Isendahl, and published by George Siemens, in Berlin, is entitled "Maschinentechnisches Taschenwörterbuch." In addition to the ordinary technical terms especial care has been taken to include the many terms connected with electrical engineering and automobiles. The first part is in French, with the corresponding terms in German and English. The German and English parts will follow.

The omnibus line between Rouen and Feuille in France has been so successful that two new routes will be similarly equipped.

## GERMANS FEEL ELATED OVER THEIR PROGRESS.

### PETER'S HIT IN TIRE RIMS.

**New German Automobile Paper—Germans Cautiously Hold Back Orders Waiting for Foreign Shows—Notable Progress in Device for Mounting and Dismounting Double Tube Tires.**

*Special Correspondence.*

BERLIN, Nov. 19.—After the close of the exhibitions in Hamburg and Leipsic, automobile manufacturers are resting on their oars, feeling that German progress has been abundantly proved and that the objections which were raised against the design of German cars, as being clumsy or inelegant, have been almost disposed of. I have written you nothing about the Leipsic show because it really suffered greatly from being almost simultaneous with the more important one in the old Hansa town which is now recognized as one of the great metropolises of the world. A great fillip was given the trade in Hamburg, but the German manufacturers do not claim that they could not make more cars if they had orders for them.

#### BUDDING PUBLIC ENTHUSIASM.

The public, as a rule, are much more liberal purchasers of motor cars than a year ago, but it is noted, nevertheless, that the majority withhold the orders which they intend to give till "next spring," preferring to await the developments of the French and British exhibitions. There is not here, as in France, any sentiment for building up the motor industry on national lines. People want the best, irrespective of where it is made. Signs are not wanting, though, of some opposition to this callous policy, which really means a great national loss, and it is becoming understood that a little more enthusiasm for the German products would pay in the end. The German automobile press has not done enough to foster the automobile movement, being over-conservative and afraid of incurring the expense of presenting automobile news in an attractive form.

This, it is now stated, will be remedied by a new publication, *Die Automobil Welt*, of which the first number will appear in January.

#### PETER'S PRACTICAL RIM.

In the ceaseless flow of improvements by which the German industry is gradually assuming its natural place beside the industries of France, England and America, those pertaining to tires have been recognized in all countries, and the latest of these promises to eclipse all the previous ones. This is the dismountable tire rim, made by the oldest German rubber tire firm, Louis Peter, of Frankfort-on-the-Main. It has, indeed, been in the market for a whole year, but only lately has it been possible to send any of the product abroad where it has gained quick

recognition. At first the rim was used only for solid tires, but its virtues for double-tube pneumatic tires brought it celebrity through the quickness with which a punctured tire could be removed, repaired and remounted. It consists of a steel rim in two pieces. The main piece is a flat rim with the usual holding-flange along the circumference on one side. Near the other edge is a circumferential groove and at one point a recess 1 inch deep and about 4 inches broad. The other piece is a sort of large split ring, on the inner flat circumference of which there is a flange corresponding to the shallow groove in the main piece; its outer circumference forms the other tire-holding flange. At one point the ring is split and near to this point, on both sides, are lugs, reaching inward, forming the support for a screw-bolt clamp, by which the ring may be expanded or contracted. In mounting the tire one holding edge is simply pushed under the fixed retaining flange of the rim. Then the split ring, in expanded condition, is placed with its inner flange in the circular groove of the main portion. The other edge of the tire is readily pushed under the retainer-flange and the split ring is then contracted by means of the clamp, fixing the tire securely in position. So as to give room for the clamp a recess is cut into the wood felloe of the wheel, corresponding to the recess in the main portion of the steel rim. The entire wheel and tire present nothing unusual in appearance, except the bolt clamp, which is not in any sense disfiguring.

This very simple device for fastening double tube tires has robbed punctures of its horrors and is receiving very flattering mention in France and England.

## Foreign Notes.

Deprived of its technical and commercial character the automobile sport would cease to exist, says *The Autocar*. Certainly no race would be authorized simply for testing the driving skill of private owners. If automobile racing were to be treated as a sport, and nothing else, its character would undergo an entire change, and instead of international races lasting several days the contests would be confined to short distances.

New Zealand allows motor cars to be driven at any "reasonable" speed, subject in the cities to the same restrictions as horse-driven vehicles. No definite speed limit is imposed. The Australian colony passed these regulations by parliamentary act on September 15 last, and motorists in the mother country point to them with envy.

Mrs. S. F. Edge, wife of the winner of the Gordon-Bennett International Cup, pays her fines for fast driving in English police courts like a man. She appears in a fur raglan.



## NEW DECAUVILLE LIGHT CARS IN THE UNITED STATES.

Until the past summer the Decauville car has been known in this country only by reputation, as one of the leading makes of road car for private use; fast, comfortable, quiet, of strong and simple construction, and fitted for those who wish to care for their cars without the aid of a professional operator. During the past three months several of these cars have been seen on the roads about New York, their performance fully justifying the reports that preceded them. The Standard Automobile Co., of 136 West Thirty-eighth Street, New York, the American agent of the Société Decauville, of Paris, is now importing them regularly in the two sizes, two-cylinder 10-horse power and four-cylinder 20-horse power.

The Decauville cars exhibited at the Paris exhibition last winter showed a

The motor casing and gear case are practically one box, avoiding all danger of distortion of the shaft; the part of the shaft outside the gear case being fitted with universal joints. The splash system of lubrication, with ring oilers is used, and the gears run in an oil bath. The cylinders are 4 3-8 by 4 3-8 inches, giving 10 horse power at a normal speed of 1,000 revolutions; there are four speeds, 8, 16, 25 and 35 miles, with reverse. The speed of the motor may be varied from 400 to 1,800 revolutions, giving perfect control of the car under all conditions.

A special feature is the ignition. The battery is sufficient for a run of more than 200 miles, but under ordinary circumstances the ignition is by means of a small dynamo driven from the flywheel. The motor is started from the battery, but as soon as a speed of 600 revolutions is reached, an automatic governor on the dynamo throws the dynamo into opera-



DECAUVILLE CAR USED IN NEW YORK BY THE IMPORTERS.

great improvement on those which preceded them, but the present cars are of a still newer type, introduced last July, and first imported to this country in September. The machine shown is the 20-horse power demonstration car, which was loaned to Dr. J. M. Kilmer, of New York, pending the arrival of a similar car which he had ordered, and which reached port and was released from Public Stores on November 22.

These cars have the tubular chassis, carrying the motor in front, with the latest form of flywheel clutch and direct transmission by central shaft to rear axle, the drive being direct on the fourth speed, up to 35 miles, or 40 with accelerator.

tion, a part of its current passing through the coil to the igniters, while the balance goes to charge the battery. At a speed of 1,000 revolutions the governor acts to check the dynamo; when the accelerator is used for higher speeds it cuts the dynamo off from the battery, so that all danger of over-charging is obviated. Both motor and dynamo are readily accessible by merely raising the lid of the hood. The motor casing encloses the flywheel and clutch, thus protecting them from mud and dust. The car has an excellent record in France and England, both on the track and on hills; but it is chiefly esteemed for its reliability and regularity of running in ordinary road service.

## COOLEY INSTANTANEOUSLY REVERSIBLE ROTARY STEAM ENGINE.

Considerable attention was attracted at the Mechanics' Fair, in Boston, by a rotary steam engine for automobile, marine and stationary use, which was demonstrated by the Cooley Cycloidal Engine Company, of Allston, Mass. The four engines on display were 13 inches in length by 4 3/4 inches in largest diameter, being barrel shaped. The inventor, in charge of the display, stated that they develop 10 horse power upon 100 pounds steam pressure, and 6 horse power on 80 pounds.

One of the engines was mounted upon a light stand, and a direct shaft passing out of one end entered a glass tank containing two tons of water, in which a 13-inch propeller was mounted at the other end of the shaft. The whole volume of water in this tank was made to boil furiously as the propeller was started, stopped and reversed. Each of these operations was instantaneous, the reverse being so quick that the movement could not be caught by the eye. Above at the middle of the barrel, and the exhaust passed out through pipes below. The engine has three sets of valves disposed in three longitudinal chambers of semi-circular form cast in the barrel of the engine at equidistant points around its circumference. A small shaft extends through each of these and on its outer end carries a pinion in mesh with a spur wheel with alternating blank sections, centrally mounted at the end of the barrel. This wheel or disk is provided with an upright handle, by which it is revolved in either direction to open, close and reverse the valves.

Although the promoters declined to make public the details of internal construction or give any information regarding economy of operation, the inventor stated that the barrel is divided into three internal chambers, into which the steam passes successively, utilizing the full expansive force of the steam, and that the bearings and all parts are lubricated through the steam.

Two automobiles, one a runabout and the other a surrey, were also upon exhibition, fitted with the Cooley engines, and mounted upon roller stands, on which the drive wheels revolved. The runabout had one of the 10 horse power engines fitted transversely just beneath the seat. At either end of the engine shaft was a small pinion, each in mesh with a 5-inch bronze spur gear on the end of a counter-shaft beneath the engine. This counter-shaft carried at its middle a steel sprocket wheel from which drive was by means of a chain to the differential, as usual.

The surrey was fitted with two engines, one located as in the runabout and the other placed forward of and slightly beneath the first one. Both engines were geared to the same spur gears on the counter-shaft.

## Consular Intelligence of Motor Bicycles Abroad.

### Wave of Popularity for the Power Wheel Among English Middle Classes a Spur to Manufacturers and Riders in America.

Probably the popularity of the motor bicycle depends greatly upon local conditions, and will vary with these, on the same principle that makes the ordinary bicycle popular in Syracuse and Cedar Rapids, but comparatively little used in New York city. With regard to the motor bicycle, it seems quite possible that national characteristics will play a role in deciding its future, as it appeals most strongly to the young of the well-to-do classes, whose habits and resources vary greatly in the different countries. At present those in England are taking a fancy to this form of locomotion, and the American Consul-General in London, Mr. H. Clay Evans, has sent an interesting paper home, suggesting not only that our manufacturers might compete with France and Belgium in supplying England with motor bicycles, but also that it might be well to prepare for a similar popularity for the motor bicycle in this country. In the following, Consul Evans' communication is given almost complete. He writes:

The motor cycle trade in the United Kingdom is a matter of practically only two years' growth; but it promises to become a most important branch of the automobile business.

Although motor cycles are not yet nearly so numerous as the pedal-driven machines, there are already some thousands in use in the United Kingdom, and their appearance in London and on the country roads near all the larger towns is now so common as to no longer excite comment. The new sport has already a special journal devoted to its interests.

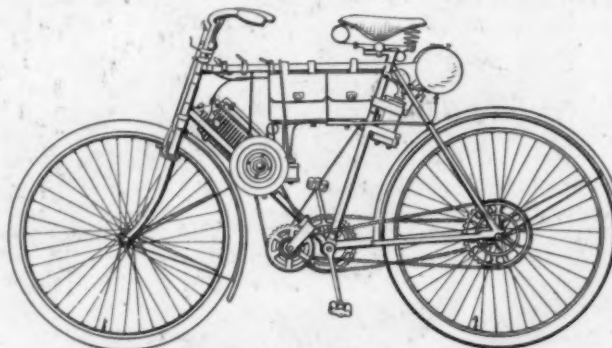
While there is, popularly speaking, a boom in motor cycling and there are over a score of machines on the market, the majority is of French or Belgian make, and a number that are advertised as English machines, with English names, are either imported outright or consist of continental motors, built into English frames by local companies. There are probably half a dozen machines that are really English built throughout, and of these only three—the Singer, the Enfield and the Humber—are the product of big factories that have previously made a reputation in the cycle business, and have now turned their attention to motors, owing to the popular demand. America is represented in the market by three machines, the Mitchell, the Orient and the Royal, all of which, it may be said, compare favorably with the best English and continental makes. There is still room, however, for the American manufacturer

who will cater to the demands of the English rider.

Belt-driven machines are vastly in the majority, despite certain obvious disadvantages of the system; but among the high-grade English machines the Singer is gear-driven, and the Humber has a chain drive with a spring clutch for taking up the starting strain of the motor. The high-tension electric ignition system, with coils and accumulators, is almost universal, though the Singer has an electro-magnetic ignition device which works very satisfactorily.

#### LIGHT MACHINES PREFERRED.

Excessive weight is the most objectionable feature of the prevailing type of machine. Those most commonly seen average 100 pounds. One of the standard road machines weighs 120 pounds, while



GARRARD TWO-SPEED MOTOR BICYCLE.

the track racers, though they hardly deserve to be classed with the popular motor cycle, reach as much as 250 or 300 pounds. The lightest practical road machine is the Clement-Garrard, a French product. The motor set complete weighs only 21 pounds, and is built into an English frame by a company in Birmingham, the machine scaling 65 pounds, all on.

The principal difference between the English and American machines at present is that the English are belt-driven, instead of chain-driven or direct-geared. The motor is frequently merely clamped into the diamond frame of an ordinary bicycle, instead of being built into a special frame. It is only fair to say, however, that a number of special frames are now being designed, with a special view to standing up under the increased weight and vibration of the motor. Accumulators are favored as against dry batteries or electro-magnetic ignition. The standard horse power up to date has been 1 1-2, but new machines are being constantly turned out with engines of from 1 3-4 to

2 1-2 horse power, to meet the demand for greater hill-climbing power. It is generally conceded that the very high-powered wheels are wasteful of fuel and subject to excessive vibration on the level, and that the ideal machine will be one with a light and comparatively low-powered motor, but with a two-speed gear that will insure good hill-climbing power.

In spite of the English speed limit of 12 miles per hour, the English motor cyclist demands a machine capable of a good 20 miles on the level, with ability to keep it up without danger of overheating. It may be remarked that English roads are much better than the average in America, so that the machine which will endure hard work in the United States may be assumed to be perfectly capable of meeting English requirements.

It must be borne in mind, however, that the English purchaser, while he is able and willing to pay, demands first-class material and workmanship for his money, and the surest way to spoil a promising market is to try to tempt him with anything less than the best, either on the score of cheapness or attractive appearance. Unfortunately, it is a matter of history that the English market for Amer-

ican bicycles was ruined in just this fashion, when it promised to develop into an important field. True, there are one or two standard makes of American wheels that are still recognized here as models of excellence, but the work of other American firms, in throwing a lot of cheap low-grade wheels on the English market, ruined the reputation of our bicycle, so that both dealers and riders now refer to American wheels as "Yankee trash" in the most matter-of-fact way, and it is hard to persuade them that we can and do produce wheels of any other sort.

#### REQUIREMENTS IN DESIGN.

Of course, in its present stage of development, the motor cycle is undergoing constant change and improvement. There is no machine on the market that can claim to combine all the desirable features. But there are several points that might well be kept in view by a maker who wants to produce an ideal wheel for the English trade. Weight should be maintained as low as is consistent with effective working. A 50-pound wheel at the



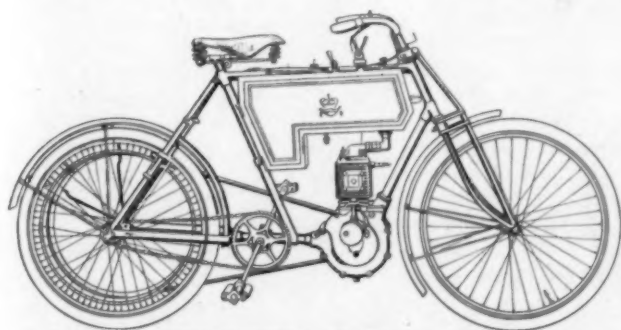
present juncture would command practically its own price. A thoroughly effective chain or gear drive, obviating the constant belt troubles that now worry the rider, would soon make its way, in spite of the popular idea fostered by many makers that the belt drive is the only ef-

a swing-back pedal that will do away with the cramped position incident to keeping the feet on fixed pedals during a long ride.

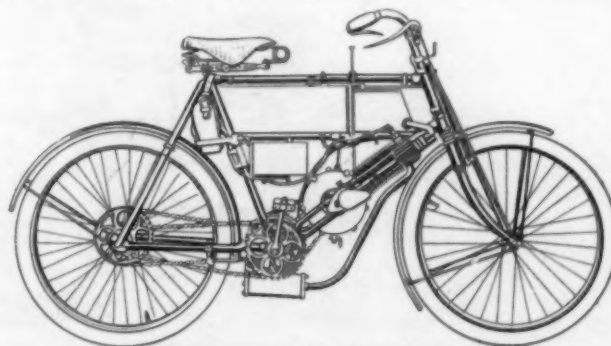
#### TYPES NOW IN USE.

The accompanying illustrations will give an idea of the types of machines in most

prominent place at present in the English trade. The motors are sometimes imported and built into English frames, though the larger number of these cycles are French built throughout. They are all belt-driven, with the usual high-tension ignition, and while there is no striking



REX BICYCLE WITH VERTICAL MOTOR.



HUMBER CHAIN DRIVE BICYCLE.

fective and practical form of transmission. A simple two-speed gear, giving 20 miles an hour on the level, with the ability to take grades of one in seven without pedal assistance, is in great demand, and is not forthcoming. A light weight, but reliable form of electro-magnetic ignition would win its way against the now popular accumulator system. The trouble with the present magneto systems is that they will not endure the constant vibration. Ample mud guards are always demanded, preferably with an overhang beyond the front fork. English road riders have to contend with a large percentage of rainy weather, and they will cheerfully face rain for the sake of a ride, so that good mud guards are essential. The petrol capacity of the machine should be at least 100 miles. Single-lever control of the gas and electric-sparking devices has been tried, and proved both effective and popular. Anti-vibration seat posts and handle bars are

common use here. It may be remarked, however, that the Minerva, the Werner and the Clement-Garrard, all foreign machines, are more numerous than all the other makes combined. Finally, prompt delivery is of great importance, as there are but few of the machines on the market that can be supplied by the makers from stock.

The Ixion two-stroke motor weighs 18 pounds, claims to develop 1 1-2 horse power and works with friction roller on front tire. It is a French device, but an English company is now fitting it to ordinary road bicycles. Price, motor set, £15 15s. (\$76.64); with cycle complete, £27 10s. (\$133.83).

The Clement-Garrard is a French motor weighing only 21 pounds, built into an English frame by the Garrard Manufacturing Co., of Birmingham. It holds a record of 100 miles on three pints of petrol and is the lightest practice machine now

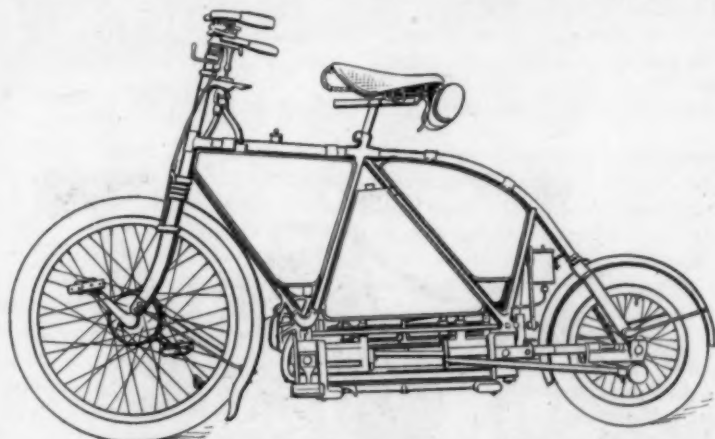
mechanical feature about them, their workmanship is excellent, and their reliability has won them their high rank in the estimation of English cyclists.

The Holden is a peculiar looking English machine, manufactured by the Motor Traction Co., Limited, Walnut Tree Walk, Kennington, London, S. E. It has no belt, chain or pedals—the four cylinders driving direct to the small rear wheel. One coil and trembler actuates them all. The engine is water jacketed, 3 horse power, and can be controlled by a single lever from walking pace to 30 miles per hour. It has no flywheels or crank cases. The lubrication is automatic, and petrol can be carried for 150 miles. As it is a comparatively new machine, it is impossible to say just how its radical features will compare in actual work with the standard type of small combustion motor.

Another type of English machine is manufactured by the Enfield Cycle Co., Redditch, England. The 1 3-4 horse power motor is mounted on the steering head, giving an extra long belt drive. It is understood, however, that the company's next machine will carry the engine inside the frame. Petrol tank, coil, accumulators and lubricating reservoir are all carried in the large metal case inside the diamond. Price, 50 guineas (\$255.50). The same company makes a 2 3-4 horse power tricycle at 75 guineas (\$383.25), and a 3 1-2 horse power quad at 120 guineas (\$613.20). The higher powered engines are water cooled.

#### WILLING TO PAY GOOD PRICES.

The Singer motor tandem is a strictly English machine, by the Singer Company, of Coventry. It is peculiar in having the whole of the motor mechanism inclosed in the driving wheel. The bicycle is built on the same principle, but drives from the rear wheel. The motor and petrol tank ride on the axle, to which the motor is geared direct. The ignition is magneto electric, all the necessary levers being



HOLDEN FOUR-CYLINDER, PITMAN DRIVE MACHINE.

absolutely essential to comfort, and while there are good devices of this sort on the market, I believe there is at present no machine turned out from the factory with them. Another feature strongly demanded by riders, and not yet supplied, is either a comfortable spring foot rest or

on the English market. Weight, complete, 65 pounds. It is belt-driven, with high-tension electric ignition, and may be taken as one of the best types of English roadster. The company is putting out a chain-driven machine for next season.

The Werner French motor holds a

controlled from the handle bar. The bicycle motor is of 2 and 2 1-2 horse power, and the machines are extremely good hill climbers. A spare petrol tank can be carried in the frame, giving a capacity of nearly 200 miles. The price of the bicycle

### CALCIUM CHLORIDE AND GLYCERINE FOR COOLING WATER.

Calcium chloride ( $\text{Ca Cl}_2$ ), the substance most commonly used as an admixture to the cooling water of gasoline

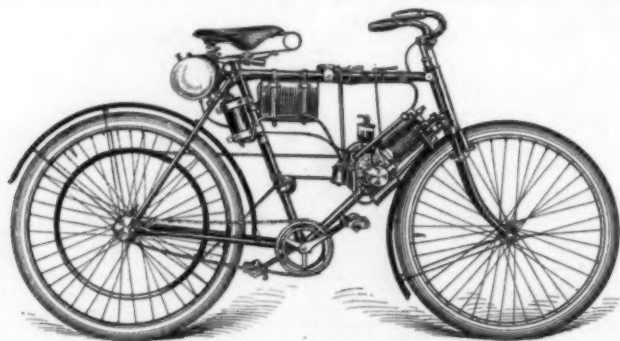
and a slight effect on steel, iron and copper is also noticed.

In preparing the mixture for use in automobiles an easy method is to stir 8 pounds of commercial calcium chloride in  $\frac{1}{2}$  gallon of water. This makes one gallon of saturated solution. To this is added an equal quantity of water, or, in a mild climate, up to two gallons of water. If a greater quantity is required, the same proportion should be observed with the increased quantities. Unresolved crystals and impurities should be strained off.

In order to be fairly certain of getting the mixture of the right percentage and specific gravity, the first saturated solution of the chemical should be at a temperature of about 60 degrees Fahrenheit.

Commercial calcium chloride contains more or less "hydrated water" ( $\text{C H}_2 \text{O}$ ) and quantity of unsolved crystals remaining in a saturated solution, produced as described, may therefore vary somewhat, but not greatly.

If glycerine is preferred to calcium chloride for making an anti-freezing mixture, care should be taken to obtain an article which is free from acids. The presence of acids may be detected by testing with litmus paper. Good results



CLEMENT-GARRARD SIXTY-FIVE POUND BICYCLE.

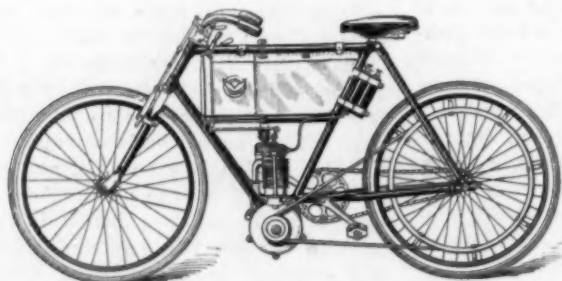
is £70 (\$340.65), and in spite of its high cost it seems to be a popular machine, indicating that the English rider is able and willing to pay well for a satisfactory wheel.

Other popular machines are:

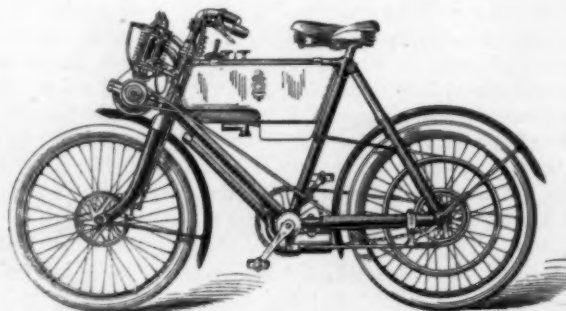
The Rex (English) 2 horse power motor and petrol tank carried inside frame;

vehicles, can be purchased in small quantities at from 5 to 10 cents per pound. It costs only about 1 cent per pound to produce.

A solution of calcium chloride of 1.20 specific gravity does not freeze until a temperature of 15 below zero Fahrenheit has been reached.



WERNER, WITH LOW VERTICAL MOTOR.



ENFIELD, WITH MOTOR ABOVE FRONT WHEEL.

belt drive; front fork strengthened; petrol capacity, 100 miles; price, 48 guineas (\$245.28); weight, 100 pounds.

The Minerva, a typical Belgian motor, which is imported and built into all sorts of English frames; made in 1 1-2 and 2 horse power; uses belt drive and coil and accumulator ignition.

The Royal Sovereign, and English machine of conventional type; 1 1-2 horse power motor and petrol tank carried inside the frame; drives from a twisted rawhide belt; maximum speed, 30 miles per hour; price, 33 guineas (\$168.63); London Machinists' Company; High Street, Kingsland, London, N.

The Clyde motor bicycle; English made; 2 horse power engine built into frame, magnetic ignition; petrol capacity, 150 miles.

A brigade of young, lusty and leisurely owners of automobiles to train for military dispatch work under the leadership of an army officer, is one of the latest suggestions for combining fun and utility per automobile.

Frequently, chloride of lime ( $\text{Ca O Cl}_2$ ) is sold for calcium chloride, but this substance has a very corrosive effect on steel and iron. In the many cases where it has been reported that calcium chloride had a similar effect, it is now generally be-

lieved that the substance must have contained lime. On zinc and galvanized iron there is, however, a strong injurious effect also from the pure calcium chloride.



SINGER TANDEM TRICYCLE—MOTOR IN FRONT WHEEL.

lieved that the substance must have contained lime. On zinc and galvanized iron there is, however, a strong injurious effect also from the pure calcium chloride.

Losses from evaporation of either calcium chloride or glycerine mixtures should be made up by adding water alone, distilled water being preferable.



## FINDS PLEASURE IN REBUILDING HIS AUTOMOBILES.

BOSTON, Nov. 27.—There are automobilists who get all their pleasure from speeding their machines over fine roads; there are others who take their only real satisfaction in exercising their mechanical ingenuity in improving or rebuilding every vehicle which may come into their possession; there are others, still, who enjoy both lines of activity. A well-known New Yorker, who spends his summers in the Boston district is one of the third type of enthusiasts. He is Dr. Charles H. Parker, and he has just ended his second season of automobile experiences at his summer place at Beverly, on the Massachusetts North Shore. He was one of the members of the new North Shore Automobile Club, which this summer for the first time gave the automobilists in that fashionable summer colony a permanent standing against the hostile devotees of the horse.

Dr. Parker has turned one end of his

machinery. He arranged with Upton, the engine builder at Beverly station, for a new engine, such as often has been used in gasoline launches, and practically made a new vehicle out of the rig.

So far as the special steam carriage is concerned, it might be thought that with the engine and boiler in front there would be considerable odor of gasoline from the burner, which would be blown directly into the faces of those occupying the seat. But, although the vent is vertically over the boiler when the carriage is at rest, when it is in motion a kind of scoop in front starts a forced draught, and the exhaust is underneath, so that all vapors and odors are carried to the rear without being noticeable to the passengers.

### Hartford's Municipal Automobiles.

*Special Correspondence.*

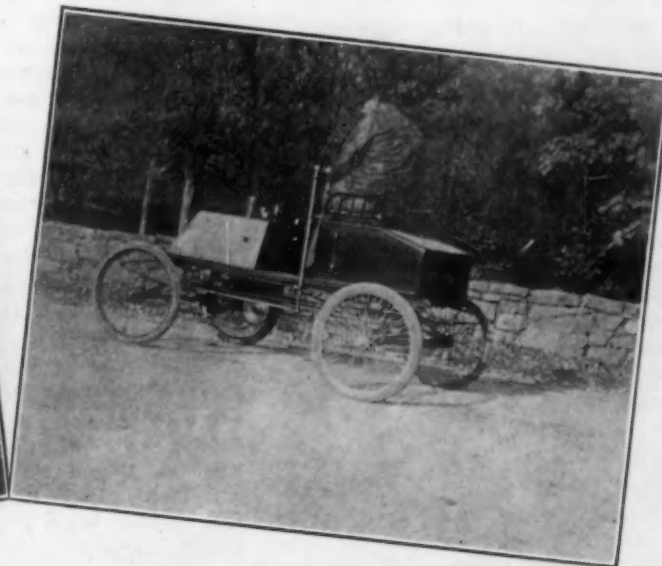
HARTFORD, CONN., Nov. 30.—This city has been one of the most enterprising of American cities in adapting the automobile to its municipal needs. For more

amine the motor patrol wagon, and to interview the authorities on its success. A visit was also made to the factory of the Electric Vehicle Co. It is probable that Providence may buy electric vehicles to supplant the seven wagons now in use.

## PITTSBURGER TO BUILD A \$175,000 PRIVATE STABLE.

*Special Correspondence.*

PITTSBURG, Nov. 29.—F. T. F. Lovejoy, former secretary of the Carnegie Steel Co., of this city, has let plans for the construction of an automobile stable to cost \$175,000. It will be built in his Homewood property and will be the finest private stable in this part of the State. Mr. Lovejoy became interested in the automobile three years ago and now it is said he hardly knows how many motor vehicles he owns. But this is probably an exaggeration. Certain it is, however, that he has probably twice the number possessed by any other single person east of Philadelphia. Several of them are



CONVERTED HORSE STABLE AND HOMEMADE STEAM VEHICLE OF ENTHUSIASTIC BOSTON MOTORIST.

old-fashioned horse barn into an automobile stable and shop; and outside he has a pit, wood covered, in which a workman can stand while repairing the machinery of a vehicle. There is no effort at display, but a good deal of work has been done in fitting over and rebuilding automobiles at this home-made shop.

Last year the doctor had at the shore a small Gasmobile of 12 horse power, which he used largely for running about on errands and to and from the golf links; a big 35 horse power Gasmobile surrey, which he used for long-distance riding with a party; and a small steam wagon, built largely by his mechanic, Fred Nagle, and having the engine and boiler in front of the seat, instead of underneath. But this year Dr. Parker rebuilt the Gasmobile surrey, in which he had already set over the levers and rearranged the

than a year the police department has possessed an electric patrol wagon. It has recently been found that the cost of its operation is exactly equal to that of shoeing one of the horses which formerly pulled the wagon. The city also has an ambulance electrically driven. In addition, the municipality owns a fire engine driven by motor power. Within a few years, it is believed that the city will supplant all its horse-drawn vehicles with those with motor power.

Alderman Louis Caswell has fathered all the ordinances calling for the purchase of the motor vehicles used by the city. He declares that the saving to the city has more than repaid him for the hard fight necessary to bring about the first investment.

The police officials of Providence, R. I., recently made a visit to Hartford to ex-

heavy racing models that Mr. Lovejoy uses for road work; he has others for park and boulevard uses.

Mrs. Lovejoy has several that she operates herself, and their three small children have all learned to run the small De Dions. Little Ruth, six years old, can be seen almost every day steering her De Dion over the boulevard with her father sitting at her side.

Kansas City, in preparing its ordinance for the regulation of automobiles, has forbidden the use of the word chauffeur. The aldermen, who insisted on another term, argued that the word was inappropriate, inasmuch as it means fireman in its original language. After long philosophical discussion, the board decided that the word operator comes nearest to fitting the occupation.



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SATURDAY, DECEMBER 6, 1902.

*Mr. H. F. Donaldson, Editorial Manager of the Automobile and Motor Review, left New York for Europe, this week, to attend the Paris show in the interest of our readers. After the close of the Paris show Mr. Donaldson will visit some of the important automobile manufacturing centers on the continent, and later will be present at the London Automobile Exhibition, returning to New York in time for the Madison Square show.*

## PERMANENCY OF MOTORING.

That the modern motor car is in no sense a "fad like the bicycle," as is still so often asserted, but a permanent institution, is proved by any one of at least threescore cars that completed the recent reliability run. It is probable, however, that the majority even of its adherents as yet fail to realize the immense scheme of development of which it is the central point. It is not yet possible to estimate the true value of the motor car as a factor in modern civilization, much less to forecast the nature and extent of its influences; but a glance at the brief history of trackless locomotion and at some of the incidental phases of motoring as it stands to-day will show that the production of a motor vehicle which in efficiency and economy will surpass the horse is in no way an end, but merely a preliminary step.

Less than ten years ago inventors had but one aim: to produce a self-propelled vehicle for common roads that would traverse with certainty a reasonable distance at a moderate speed. Having once attained certainty of operation, the next point aimed at was speed; and progress in this line has been so swift that, once having

after great difficulty exceeded the speed of the horse, it has been a matter of but three or four years to equal that of the fastest locomotive. At the present time the item of speed may be considered as eliminated from the problem of motor car designing, as the average rate of the leading cars of this year, without taking account of the great racing machines built for the Paris-Vienna race, is far in excess not only of all legal limits, but of all reasonable and prudent use of public highways. With a legal limit of from twelve to twenty miles, which is not likely to be increased in the immediate future, there is hardly a place to-day for the forty-mile touring car.

With certainty of operation and speed capacity achieved, the next step has been the perfection of details—motors, carbureters, burners and boilers, wheels, springs and bodies—in the effort to eliminate the many elements of discomfort present in the earlier cars. The achievements of the past year in this direction have been most gratifying: vibration, jolting, noise, smell, have all been reduced to a satisfactory minimum, while at the same time the cars have been improved in efficiency and economy. It may be that no one make is yet perfect, or even that many different makers have as yet failed to attain success in the majority of these points; but so much has been accomplished within a very short period that it is safe to assert that the motor car of to-morrow, if not of to-day, will represent as high a degree of perfection as any other mechanism of transportation.

This development of the private or pleasure car is rapidly preparing the way for similar progress in commercial and public passenger vehicles: two classes as yet but imperfectly developed, especially in this country. The individual successes attained by various makers of heavy wagons in England, and of the medium classes of business vehicles in France, promise a general advance in all countries in the near future. Enough has been done already to prove that the day of the horse as an essential to business transport in the cities is nearing its close.

The perfection of the motor vehicle itself is, however, less an end than a means to broad and far-reaching results. The good roads cause, inherited from the bicycle, has already received a new impulse from the pleasure car, and very much more may be looked for as soon as the next stage—the general adoption of the motor car for utilitarian purposes—is reached. It is quite possible that the first effect of the motor vehicle has been to retard rather than to aid one important part of the good roads movement, that of the farmers whose interest was aroused by the crusade of the wheelmen a few years ago. The idea has been to a certain extent prevalent that good roads bring a train of Red Devils and Green Ghosts, while such bad roads as the farmer has known from boyhood are in themselves a bar to these terrors. Once in

possession of his own car, however, for business or pleasure, the farmer must of necessity realize the importance of good roads.

Up to the present time, practically, the pleasure car alone has been known in this country. Within the past year this type has been adapted to a certain extent to the lighter business uses, and at the same time much progress has been made in the perfection of various classes of heavier business vehicles. With the latter on the roads in any numbers, the demand for good roads that was at first limited to the wealthy motorists will become almost universal.

The meaning of good roads has heretofore been limited; given a well-graded roadway, with smooth hard surface, dust and dirt have been accepted as necessary evils. The effect of the motor vehicle on this phase of the question is in a way paradoxical; it makes no dirt itself, nothing could be cleaner, but where dirt exists its annoying effect is aggravated by the car. The great evil of motoring, the dust, is one that promises to cure itself, or at least to be cured by motorists in self-defense. Where the horseman and the wheelman asked for merely good roads, the motorist demands clean roads, and he is working to-day to get them. Coincident with the low, heavy cars and high speeds that aggravate the dust evil to an extent heretofore unknown, there has arisen among motorists a movement for the binding of the road surface with oil, tar or similar agents, which will make dust impossible.

The nature and extent of the evil of street dirt in cities, though fully realized by the medical profession, has thus far been ignored by the public, or if occasionally called to mind, has been dismissed as inevitable and without hope of remedy other than the ordinary failure of municipal street cleaning. The perfection of the motor car makes possible the removal of the main cause of this menace to the public health; the horse, in his stable or at work in the street. If it were possible to reserve one important street in a city for motor vehicles exclusively, with the same street-cleaning service as on the adjoining ones, where horses were permitted, the resulting object lesson would be of incalculable value.

Even the adherents of the motor car have looked on it thus far as nothing more than a cleaner, faster and infinitely safer substitute for the horse in a certain line of work. All this it certainly is, but this is only the beginning. The motor car which can do more than the work of a horse with a corresponding vehicle for five hours or perhaps ten can continue this work day and night without rest, with short stops for fuel, and with merely a change of attendant. With cars of fair strength and power and moderate speed—ten to twenty miles at most—running on the average good macadam road, there opens up the possibility of a system of trackless traffic, for passengers in



and freight, as vast and unlimited as the electric street railway system, which within a decade has revolutionized the traffic of this country. Just as the local electric railway is auxiliary to the great steam railways, the motor car promises to be auxiliary and subsidiary to both, opening up localities where neither is possible. The abuse of private locomotives on the public highways is but a fad of the selfish and thoughtless, and will pass away as the novelty disappears and the force of public sentiment is felt, giving way to the universal use of self-propelled cars of all classes on smooth, clean and dustless roads in country and city alike.

### Cement Tracks for Highways.

While the steel plate track advocated by Gen. Le Roy Stone is being tried for heavy traffic by means of a short experimental stretch on Murray Street in New York with a view to possible adoption for highroads on a larger scale, the plan for a continuous macadamized road from New York to Chicago has brought to light another scheme for obtaining improved roads at a comparatively small cost. According to the new plan tracks for wagons should be laid down in the roadbed in the form of two parallel strips of concrete slightly hollow on the top and with rounded edges to permit wagons to run on and off without difficulty. The cross section of the concrete is to be T-shaped and a cable is to be strung through these rails lengthwise closely under the surface, tying the successive sections of the tracks together and imparting the strength for resisting heavy local strains. This construction is proposed by W. E. Jacques, of Detroit, and A. C. Crozier, who are endeavoring to interest the Automobile Club of America in their enterprise.

### Foreign Vehicles for Buffalonians.

#### Special Correspondence.

BUFFALO, Dec. 1.—Announcement is made that a number of foreign automobiles are to be brought to Buffalo next year, orders having been placed by some of the wealthier men for touring cars which will include the Panhard, Mors and Mercedes makes. The maximum speed of these machines will be from 40 to 60 miles an hour, and they will cost from \$7,500 to \$10,000 each. At present there are 470 automobiles in Buffalo, as compared with only one in 1897—a sufficient evidence of their popularity here as well as of the rapid growth of the industry.

The secretary of the National Association of Automobile Manufacturers has within the last few days received a large number of applications for membership. By the time the Madison Square Garden Show is opened nearly all of the exhibitors, from present indications, will be members of the association.

## WINTON FIRST AMERICAN AFTER THE BENNETT CUP.

### THE CLUB HAS NO TIME TO LOSE.

**Automobile Club of America Receives First Definite Declaration of Member Willing to Race for the Club in Europe Next Summer—Another Aspirant Expected Before New Year.**

The Automobile Club of America has only until January 1 to announce its participation in the forthcoming contest for the International, or Gordon-Bennett cup, to be run in Ireland or France next year. The club can compete for the trophy with one, two or three entries, but it is not compelled to announce the names of the drivers or vehicles that will represent its colors at the same time that it makes known its intention to compete, if otherwise the announcement is made in accordance with the rules of the event. The number of the cars must be made known, however, and until Tuesday of this week no declaration had been made giving assurance that any club member desired to enter the race with a vehicle built entirely—from the ground up—of American-made component parts. Only members of a recognized club can drive in this race.

Last Tuesday the club received a communication from Alexander Winton, of Cleveland, stating his readiness to go to Europe and endeavor to bring the cup to this side.

If the club accepts the offer the Winton car—a special machine said to be under construction—will compete with two Panhards and one Mors machine nominated by the French club, two Napier machines and one other British machine not definitely decided upon by the Automobile Club of Great Britain, and possibly Mercedes machines to be entered by the German Club.

As announced in a previous number of this publication another American machine besides the Winton is being pushed rapidly to completion with the intention of entering it in the race, and it is hoped that it will be finished betimes as to give the Automobile Club of America an opportunity to test its qualities of speed and endurance thoroughly before the time arrives for announcing the number of American competitors, that is, before the end of this month.

If the American club follows the example of the French and British organizations it will have to submit the cars which it sends to Europe for this race to competitive tests before making its selection.

### Police Vigilance in Manhattan.

The chairman of the committee on grievances of the West End Association, of New York City, made an interesting report at the annual meeting of that organization held Monday evening, regarding

the steps that had been taken toward preventing excessive speeding of motor vehicles in the upper west side of Manhattan Borough. Bicycle policemen, with stop watches, will patrol the avenues most used by motorists, he said, and the police commissioners and the district attorney had agreed to lend their assistance in securing the arrest and conviction of offenders.

## HEARING ON PROPOSED LICENSE LAW IN NEW YORK.

A public hearing was given on November 28 by Law Committee of the Board of Aldermen of New York City to those interested in the proposed ordinance for the examination and licensing of all drivers of motor vehicles other than bicycles. The measure was defended by Joseph B. Thompson, of the Rights and Privileges Committee of the New York Division, League of American Wheelmen, the proposer of the ordinance. Opposed to it were Albert R. Shattuck, president of the Automobile Club of America; Joseph Oatman, president of the Associated Cycling Clubs of New York, and W. W. Niles, counsel for the National Association of Automobile Manufacturers.

Mr. Shattuck explained that the Automobile Club of America was not opposed to the licensing of drivers, but wished a State license law, objecting to the proposed ordinance as impracticable in detail. Mr. Niles argued that under the city charter the Board of Aldermen had no power to license other than business vehicles and further, that the Doughty bill stated specifically that motor vehicles were not subject to license. Mr. Thompson contended that the amended charter superseded the Doughty bill and that there was no law restraining municipal bodies from such legislation as would regulate traffic in their streets.

A discussion ensued over the omission by Mr. Thompson of motor cycles, and also over the proposal to tax pleasure vehicles more heavily than business vehicles. The ordinance is now before the Law Committee for further action.

### Oldfield Breaks Track Records.

Press dispatches announce that Barney Oldfield on December 1 drove the Cooper racing machine over the Grosse Point track at a greater speed than has ever before been recorded for an automobile on a circular track. The performances were timed by the Detroit Automobile Racing Association. Three trials were made. At the first trial for five miles the time by miles was recorded as follows: 1:03 3-5, 2:08 1-5, 3:12, 4:14 4-5 and 5:21. This was improved at the second trial, giving: 1:01 2-5, 2:05 1-5, 3:11 1-5, 4:15 2-5 and 5:20. The third trial was for one mile and resulted in the figure 1:01 1-5.

## BOSTON MOTORISTS AGITATED BY ARRESTS.

CLAIM THEY ARE PERSECUTED.

**Say that Use of Stop Watches by Police May Work Injustice—Strong Sentiment Will Back Massachusetts Automobile Club's Effect to Secure Uniform State Law.**

*Special Correspondence.*

BOSTON, Dec. 1.—Automobilists in Boston and all over the Boston district are now thoroughly stirred up over the speed-limit law. Within the city the Police Commissioners have announced themselves as bound to put a stop to speeding, and they are securing the arrest of automobile operators right and left in numbers which are regarded by the motorists as a sure indication that the police idea of enforcing the speed law amounts to persecution.

The principal trouble in Boston is experienced on Commonwealth Avenue, where the roadways are under the control of the city park department, which has made an arbitrary rule fixing the speed limit there for all vehicles at eight miles per hour. On other park roads controlled by the city the limit is ten miles, the same as on the ordinary city streets. No less than twelve automobilists have been convicted and fined out of the number arrested by the Boston police within the two last months, and this week eight or ten more are down to appear in court on summons from the police officers who operate the "traps" set to catch automobilists on Commonwealth and Huntington Avenues.

TRAPS FOR THE UNWARY.

Outside the city automobilists are raising their voices against police traps set in the outlying towns that are blessed with particularly good roads, like Lincoln and Weston. Constables are on the watch at certain places in these towns every fine day, and either by horns, signs, or the use of the telephone, they notify consorts, who take the time of passing motorists, and hold them up if the watch appears to show a violation of the law. Owners protest against this, claiming that a stop-watch in unskillful hands may appear to show a violation over a short stretch of road where no violation exists, and that therefore justices ought not to accept such evidence as conclusive against the evidence of skilled automobilists in a position to observe the speed in question. Protest is also made against allowing towns to set a very low speed limit, like that of Lincoln, where the selectmen allow no greater speed than eight miles, although the roads are chiefly through the open country and are never crowded with travel. On recent Sundays the police traps in both Weston and Lincoln have been worked successfully, and a number of automobilists were booked at the police stations.

Eight of the motorists arrested were fined \$10 each in the Roxbury court on Monday by Judge Bolster. Among those who paid fines were J. R. Adams, A. T. Briggs, F. E. Stanley, A. T. Bigelow and G. M. Tinker.

UNIFORM STATE LAW WANTED.

As a result of all this, the Massachusetts Automobile Club will have gathered a mass of automobile sentiment when it goes to the incoming Legislature for a new automobile law. Not much fault is found with the present State limit, which specifies fifteen miles for out-of-town districts and ten miles in cities and villages; but this law applies only where towns have made no local regulation, and the automobilists wish to have the State law apply all over the State, wiping out the local restrictions and thereby securing uniformity.

Even if the uniform law is secured for the State at large, there is little hope that the desired relief can be secured in Boston, as it is likely that the rules of the Park Commission will be made an exception to the State law. To fix a rate in the Boston parks, or even to allow the same rate there as elsewhere in the city, would establish a precedent, because, up to this time, the Park Commission has been allowed to make its own rules for the government and control of the public lands within its jurisdiction.

MASSACHUSETTS CLUB ACTIVE.

The Massachusetts Club has done more than think of its coming campaign at the State House, however, for the president, Colonel James T. Souther, has named Bordman Hall, a well-known lawyer-member of the club, and Conrad J. Ruetter, who has been prominent in previous automobile hearings before legislative committees, to serve as the Legislative Committee this year. The Legislature convenes in January. If this committee is not able to secure the desired changes in the existing automobile law, it expects at least to be able to head off much adverse legislation.

SENSIBLE JUDICIAL OBSERVATIONS.

Judge Henry S. Dewey, of the Municipal Court, has given the motorists some encouragement, however, by an utterance made the other day in fining Ambrose Jackson, a caretaker, who was arrested for speeding. The judge fined him \$3, against the \$10 or \$25 rate which had heretofore been the custom, and said in the course of his remarks that every case should be disposed of on its merits, and intimated that one man driving actually faster than the legal rate but with skill and due care might in many instances merit arrest and punishment less than another man driving at slower speed, but with no skill and much recklessness. The judge said he did not believe that when the Legislature made the maximum ten miles per hour it meant or expected that machines would not be driven faster than this at times on every highway.

## CLUBLAND

SYRACUSE WANTS AUTOMOBILE DAY  
AT STATE FAIR.

*Special Correspondence.*

SYRACUSE, Dec. 1.—A special meeting of the Automobile Club of Syracuse was held last Monday night in the assembly room of the Yates Hotel and the initial steps were taken to secure an "Automobile Day" at the State fair next September. C. Arthur Benjamin and Frederick H. Elliott were appointed a committee to lay the matter before the State Fair Commission and to make all the preliminary arrangements.

Another matter of importance to come before the club was the good roads question, and George S. Larrabee was appointed to bring it to the attention of the Board of Supervisors of Onondaga County. It was reported that from seventy-five to one hundred miles of new State road had been built in and around Rochester, while in and around Syracuse only five miles were built. It is the purpose of the Automobile Club and Mr. Larrabee to make a special effort to prevail upon the highway committee of the supervisors to take up this matter. It is proposed to raise a fund by voluntary subscription to employ a young attorney who will be alive and interested enough to go about the matter in the proper way to secure the best results.

It was voted to hold the annual dinner of the club in January, the exact date to be fixed later. To this will be invited several of the most noted automobilists of the country, who will make addresses. T. D. Wilkin, C. A. Benjamin and F. H. Elliott were appointed to revise the constitution and by-laws and make their report at a meeting to be held on December 8. The new constitution will be voted upon at the annual banquet, which will be held at the Century Club. It is proposed to hold meetings every two weeks during the winter, at which general talks will be given upon various subjects of interest to motorists. Prominent among the questions to which the Syracuse Club will devote its attention to is that of good roads.

The club indorsed Mr. Elliott's plan for the formation of a State association of automobile clubs. The following new members were elected: Munroe C. Smith, H. H. Franklin, Theodore H. Young, H. W. Smith and J. A. Seitz.

During the past week, since the club meeting, C. Arthur Benjamin has written to Deforest Settle, of Syracuse, a member of the State Fair Commission, asking him to consider the matter of having an automobile day at the fair, and Mr. Settle has replied stating that he will be glad to present the matter to the State fair officials, who meet in a short time at Al-



bany. Mr. Settle is a great supporter of sports and it is thought will use his influence in favor of the project.

It is stated that ten wealthy Syracusans, who will not make their names known just at present, have formed a company to build a storage and repair station here. There are to be rooms in the top of the structure that can be rented to the Syracuse Automobile Club. It is stated that work on the building will be started in the spring.

### INFORMAL CHICAGO CLUB RUN TO MILWAUKEE.

*Special Correspondence.*

MILWAUKEE, Nov. 22.—Chicago motorists took possession of this city this evening, especially Jefferson and Wisconsin Streets, in the vicinity of the Hotel Pfister. Big touring cars, the like of which have never been seen in Milwaukee, small runabouts, dos-a-dos, and in fact all kinds of gasoline and steam propelled vehicles, were lined up by the curbs.

The party was made up of members of the Chicago Automobile Club, who had made an informal run to Milwaukee from the Windy City. The party was headed by Honore Palmer, Chicago's young millionaire alderman, society leader and newly elected president of the Chicago Automobile Club.

In the Robinson touring car with Mr. Palmer were Mr. and Mrs. Keith. Others in the party were Mr. and Mrs. Frank X. Mudd and P. H. Sercombe, in a Winton touring car; Mr. and Mrs. C. W. Gray, Winton; Mr. and Mrs. Paul Picard, Renault; Senator Robert B. Fort and party, and W. H. Hoopes and sons, in Packards; Mr. and Mrs. J. B. Burdette and Mr. and Mrs. J. E. Stevens, in Oldsmobiles; Mr., Mrs. and Miss Lloyd, Peerless; Dr. F. C. Green and party, Autocar, and S. A. Miles and R. H. Croninger, Friedman.

The entire party left the club house in Chicago at 10 o'clock in the morning and the first of them arrived at the Hotel Pfister about 10 o'clock this evening. From Chicago the party went direct to Waukegan, over Sheridan Drive. Luncheon was eaten at Waukegan, up to which point the tourists found the roads in good condition. Then the party proceeded through Kenosha, Racine, Cudahy, South Milwaukee to Milwaukee. With the exception of the machine owned by Mr. Picard, all were of American manufacture.

Starting on the return trip Sunday morning at 10.30, the Chicagoans lunched in Racine and arrived at the home club house between 7.30 and 8.30 that evening.

A series of winter runs has been decided on by the Colorado Automobile Club, which has quarters in Denver. Enthusiasm in that State does not lessen on account of inclement weather and rough roads.

## INDUSTRIAL

### PROGRESSIVE ACTIVITY OF LEADING MAKERS.

#### EXPANSIONS AND NEW VEHICLES.

**Cleveland Local Show Now Assured for Week of February 5—New Touring Cars of Shelby Motor Car Co. and Hoffman Automobile Mfg. Co.—Model Retail Establishment.**

*Special Correspondence.*

CLEVELAND, Dec. 1.—The Cleveland automobile show is now a settled fact. It will be held at Gray's Armory the week of February 5, which will bring it between the New York and Chicago shows, and just previous to the Detroit event. The promoters have been holding off for some time in anticipation that the National Association of Automobile Manufacturers would make some announcement relative to a ruling permitting branch houses to exhibit at local shows. Thus far the announcement has not been forthcoming and the local promoters will take chances on the members of the association being able to exhibit. Literature pertaining to the proposed show is now being sent out, and since practically all of the leading local concerns are certain to exhibit, it is almost certain the affair will be a representative one. Unfortunately, the Armory is not as large as could be desired and it is likely that the spaces will be snapped up at once. The building is 110 by 150 feet. This area will be divided up into spaces 12 by 14 and 15 by 15 feet. Judging from the enthusiasm displayed by the rank and file of the better class of citizens of Cleveland, the attendance at the exhibit will be all that could be desired.

#### WINTON GARAGE NEARING COMPLETION.

The new Winton retail establishment is well on toward completion and it is expected it will be ready for occupancy shortly after the first of the year. C. B. Shanks is anxiously awaiting the moment when he can take charge of what he claims will be the finest "garage" between New York and Chicago.

#### WINTON "PUP" DISMANTLED.

The famous Winton "Pup" is no more. It has been dismantled and the motor, which on more than one occasion propelled the little car to victory, is performing the inglorious duty of running a pump in the Winton factory. The machine did well enough for 1902, but for next year something speedier will be brought out to compete in the 2,000-pound class.

The Consolidated Rubber Tire Co. has remitted \$10 to the State Treasurer for its taxes in Ohio. It claims that its property in this State consists mainly of its trade mark and good will, although it has plants in Akron and Youngstown. The Secretary of State has ruled that the com-

pany must pay \$474 instead of \$10. He has made the same ruling in regard to a number of other companies which have reported in the same way.

#### PLANS FOR RETAIL ESTABLISHMENT.

Plans for the new retail establishment of the Cleveland Automobile & Supply Co. have been completed, and work on the building will be started at an early date. These include the remodeling and rebuilding of portions of the old music hall on Vincent street that was partially destroyed by fire some years ago. The dimensions are 152 by 75 feet. The basement will have a cement floor and will be used for storage of materials and for cleaning machines. A freight elevator heavy enough to carry any machine will be erected between this and the first floor. On the second floor front will be spacious offices, and in the rear the repository or salesroom, 36 by 48 feet, large enough to hold twenty vehicles. Still further back will be a storage room 72 by 12 feet, and in the extreme rear, the repair shop, 53 by 28 feet. Adjoining this is the night watchman's quarters, 12 by 18 feet, and a toilet room. The second floor will contain a clubroom 60 by 75 feet, which will either be utilized by the firm or leased to a club. In the rear of this will be a large storage room. The building will have storage capacity for about two hundred vehicles. It will be of brick, and substantial in construction, but with the view at every point of facilitating business.

The White Sewing Machine Co. is engaged in making excavations for its retail store and warehouse on Rockwell street.

#### TESTING HOFFMAN GASOLINE CAR.

The Hoffman Automobile Mfg. Co., of Cleveland, has completed its gasoline vehicle and is putting it through its paces on the country roads, before steady work is started on the product for the coming season. The vehicle is equipped with a single cylinder motor developing about 8 horse power, and if desired, may be fitted with a tonneau, making a touring car for light work. The car is handsomely finished and develops good speed.

#### TO OPEN TIRE STORE.

The Diamond Rubber Co., of Akron, will shortly open a branch store and repair shop in this city, which will be in charge of F. E. Taylor, who has had long experience in the tire business. On account of the large automobile interests of the city, the big tire companies find it convenient to have branch stores here.

#### STEARNS COMPANY INCORPORATES.

The F. B. Stearns Co. has been incorporated under the laws of West Virginia with \$200,000 capital stock. The company is preparing to erect a large addition to its factory which will more than double its present capacity.

#### PLANS OF SHELBY COMPANY.

E. L. Sanderson, of the Shelby Motor Co., formerly the Beardsley & Hubbs

Mfg. Co., of Shelby, has been in the city the past week on business for his company. Mr. Sanderson states that the Shelby concern has completed plans for an addition to its already large factory building and that contracts have been placed for a number of modern machine tools which will greatly facilitate getting out work. A new departure for this company will be an 18 horse power touring car to be equipped with two double acting motors. It will be a very light car and will sell at a moderate price. The company is also planning to get out a delivery wagon, but work on this will not be pushed until late next season.

#### FOREIGN AGENT AFTER VEHICLES.

For some time past a foreign agent has been conferring with the Geneva Automobile & Mfg. Co. in regard to machines for export, and it is stated that the company is about to capture an order for 500 steam vehicles. If this contract should be closed, it will probably be the largest foreign order ever taken by an American company.

#### SPECIAL FREIGHT TRAIN BETWEEN THE TWO SHOWS.

Mr. Harry Unwin, secretary of the National Association of Automobile Manufacturers, has arranged for a train to carry the exhibits from the Madison Square Garden show to the exhibition in Chicago. More than fifty manufacturers will have exhibits at the New York show, with from one to a half-dozen automobiles each. A freight car will hold four machines. By this plan, the exhibitors will be saved large sums, since the one with a small display will not be required to hire an entire car, but may divide the cost with another exhibitor. There is saved also the annoyance of tracing a shipment that under ordinary conditions might go astray. The train, which will be run over the New York Central Railroad, will consist of about forty cars.

It is proposed to dispatch press notices ahead before the train leaves New York in order that the public may gain some conception of the immensity of this industry.

#### Toledo Models for Next Year.

TOLEDO, Nov. 29.—The leading Toledo model of the International Motor Car Co.'s local plant for the coming year will be a 24 horse power gasoline touring car. It is built along the same lines as the touring car of last season, the only difference being in the power. The models this year were an 18 and an 11 horse power carriage. An agent of this concern said yesterday that one order for \$250,000 worth of these vehicles had been received from the man who is to take the London agency for the concern. The steam car is not to be abandoned at this plant. Its manufacture will be continued as before.

#### PORTO RICAN ROADS TOO NARROW FOR MOTOR STAGES.

##### Special Correspondence.

PROVIDENCE, R. I., Dec. 1.—The People's Rapid Transit Co., organized for the purpose of manufacturing, buying and selling automobiles and conducting a passenger and express business with the same, has filed articles of incorporation with the Secretary of State of Rhode Island. This is a necessary step in the reorganization of the Porto Rico Transportation Co., which was formed in Olneyville, R. I., early in 1901, for the purpose of conducting an automobile passenger and express service between Ponce and San Juan on the island of Porto Rico.

This Porto Rico project was started with great expectation of financial success. There were about thirty stockholders in the company, most of whom were Olneyville residents. Three large passenger automobiles and one for express traffic were built, and it was expected that transportation would be easy and profitable over the fine military road which was said to connect the two cities. Practically, however, this fine road was found to be so narrow in places that the automobiles could not pass other vehicles, so the enterprise languished.

Considerable money had been spent in anticipation of the business that was to result, and, including the cost of the motor vehicles, the Rhode Islanders invested about \$20,000. The new People's Rapid Transit Co. will operate these same automobiles in Westerly, R. I., running between the town and suburban villages. Several stockholders who were interested in the Porto Rico venture are in the new company. The capital stock is \$25,000, and the incorporators are John P. Thompson, Jeremiah A. Angell, Herr Prest and Frederick D. Grove, all of Olneyville.

#### MUDDY CROSS-COUNTRY TRIP OF A HEAVY BREAK.

##### Special Correspondence.

CINCINNATI, Nov. 22.—The arrival of a motor break which had been run overland from Columbus, caused some excitement at the Music Hall, where the carriage manufacturers' annual exhibition opened last Monday. It was a stock machine built by the Motor Truck and Vehicle Co., of Columbus, and was driven by O. G. Roberts, superintendent.

The break left Columbus on Sunday, with eleven passengers, and made the run of forty-five miles to Springfield in three hours. The road from there to Dayton—twenty-six miles—had been newly graveled, and, with but six passengers in the vehicle, required two hours to traverse. But the thirty-five miles from Dayton to Hamilton, over good roads, was made in one hour forty-five minutes. As rain had fallen during all of the afternoon, it was decided to

remain over night at Hamilton. The trip was resumed in the morning, although the rain continued all night, and the last twenty-five miles over steep hills was done in two hours.

When the big vehicle arrived at the carriage exhibition in Cincinnati, it was splashed with mud all over and showed that it had been through mud up to the axles. When examined by your correspondent immediately after its arrival, the radiating tubes were found to be sufficiently cool to bear touching by the naked hand, while a few minutes after the motor stopped, it was also found to be cool enough for the same test. To all appearances, the break was in condition to make the return trip immediately.

#### PLANS FOR UP-TO-DATE GARAGE IN INDIANAPOLIS.

##### Special Correspondence.

INDIANAPOLIS, Nov. 29.—A \$15,000 contract has been let by Carl Fisher, of the Fisher Automobile Co., of this city, for a two-story building, 42x200 feet, to be erected at 330 N. Illinois Street. It will be but one and one-half squares from the post office and three squares from Monument Place—practically in the heart of the city.

The storage room and charging plant, as well as the offices of the company and the club and waiting rooms, will be located on the first floor, the second floor being reserved for shops.

The intention is to make this building the headquarters for agents and a meeting place for all enthusiasts. The club-room is to be elaborately furnished in Oriental style. There will be a library and reading room, supplied with literature of interest to automobilists, and a waiting room for ladies, which will be furnished at a cost of \$800. The building will be well lighted by 210 windows, a full plate glass front and a sawtooth skylight.

There is already talk concerning the annual automobile show, which will be held in the new building in February. The date has not been definitely selected, but the show will probably occur between February 2 and 12. There is a mass of letters on the desk of Carl Fisher, secretary of the association, concerning the show, which is strong evidence that interest will be much greater even than last season.

#### To Make Taper Roller Bearings.

##### Special Correspondence.

BUFFALO, Dec. 1.—Motor vehicle manufacturers all over the country are said to be watching with considerable interest the work of the Wright Taper Roller Co., a concern which has been organized with a capital stock of \$900,000, and which is now building a big plant in this city. Upon the success of the company's product may rest a revolution in the manufacture of anti-friction bearings. The inventor



of the device is W. Hamilton Wright, who is known as the father of ball bearings. The taper roller bearing is an evolution of the ball principle, but the bearing rolls on tapered cones instead of on balls, and there is a line of contact perpendicular to the motion of the bearing, instead of a single point of contact. Severe strains that have crushed ball bearings have been borne with ease by the taper rollers.

The bearing is to be applied to automobiles and other vehicles in the operation of which friction plays an important part. Tests have been made with the roller bearings which showed that fully 50 per cent. less power was required for the same speed than for a machine equipped with ball bearings. Buffalo capital is largely interested in the new company, and the persons who have gone into the enterprise have great confidence in the investment.

#### Declined Mail Hauling Contract.

*Special Correspondence.*

PHILADELPHIA, Nov. 29.—J. Henry Mitchell, local agent of the Daimler Mfg. Co., of Steinway, L. I., was recently offered the contract for a portion of the Philadelphia mail-hauling business, which would require the services of at least two motor vehicles, one for heavy work between the central office and the several railroad stations, and the other for the package collection service over a long route in the outlying sections. The Government has all such work done by contract, its horse delivery and collection wagons being owned by private individuals, and it does not desire to purchase motor vehicles, but wants the Daimler people to furnish the wagons and do the work at a stated sum per annum. But the manufacturers could not see their way clear to entering the livery business, and were compelled to decline the Government's offer.

#### Improvements in California Vehicles.

*Special Correspondence.*

SAN FRANCISCO, Nov. 22.—The California Automobile Co. is at work on several new vehicles, embracing a number of improvements, notably, roller instead of ball bearings, solid steel instead of tubular axles, universal flexibility of joints, steel frame for support of engines and boilers in steam vehicles, and, in gasoline construction, engines mounted on separate springs to prevent vibration. These features add to the durability of the car, says Manager Ryder, and keep it out of the repair shop, while at the same time they make it more comfortable for passengers. "We are encouraged to expect to have to meet a large demand in the near future, and to this end we are preparing plans for a more extensive factory."

The Kunz Automobile and Motor Co., Milwaukee, Wis., has filed an amendment to its charter, changing its name to the Speedwell Automobile Co.

**MAY MOVE FACTORY.**—The Webster Automobile Co., whose headquarters and salesrooms are at 10 West Sixtieth Street, New York, is seeking a location for a factory which is to be either in the city or in some desirable town nearby. The present factory is in Providence, but as the greater part of the business of the company is transacted in New York, this location has been found most inconvenient. Should the plant be moved, the new factory will be on a much larger scale than that in Rhode Island, and will employ a much larger force of men. A branch of the Webster company has been opened at 246 West Fifty-third Street. C. H. Martin, who acted as observer for the Duryea machine during the New York-Boston reliability run, will have charge of this branch.

**AFTER FRENCH NOVELTIES.**—E. T. Kimball, of the Central Automobile Co., 1684 Broadway, New York, is to sail soon to attend the automobile exhibition in Paris, which is to be held December 10-25. Mr. Kimball will examine some of the latest designs in the machines made abroad, and expects to arrange for the importation of those most approved by the foreign automobilists. He will endeavor to secure a few of the newer makes for the Madison Square Garden show.

**AUTO. HEATER.**—A heater that should be appreciated by automobilists in winter has been placed on the market by the Chicago Flexible Shaft Co., Chicago. The heater, known as the Clark, consists of a metallic case lined with material capable of retaining a good deal of

## INFORMATION FOR BUYERS.

thick cast metal—that a vehicle can be driven onto them without causing them to slide. Both forms are made in sizes to receive 2 1/2, 3, 3 1/2 and 4-in. tires. They are suitable for use with heavy trucks and vehicles fitted with solid tires or any tires fitted to rims having flanges that extend beyond the sides of the tires.

**TOURING CAR.**—B. V. Covert & Co., Lockport, N. Y., are about to place on the market a light, chainless touring car, equipped with a 5-h.p. motor, the whole machine weighing only 600 pounds. The motor is of French pattern, with the transmission gear attached to it direct, and enclosed in an aluminum case. The rear axles are driven with a bevel gear, and the transmission gear is so designed that the motor drives direct on the high speed. The range of speed will vary from six to thirty miles per hour.

**AUTO. SPECIALTIES.**—A very handsome catalogue is that recently issued by John Simmons Co., 104-110 Centre Street, New York. It concerns certain automobile specialties manufactured by this company, particularly pipe fittings, valves and tools. In glancing rather hastily through the catalogue, two illustrations would catch the eye of the automobilist not deeply interested in the technique of his sport. One is that of a wire wheel valve made with handles in coils so as to radiate as much heat as possible, instead of retaining it and blistering one's hands, as is the tendency of the ordinary valve wheel. It is claimed for it that this style of handle cannot become warmer than the sur-



heat. The case has a perforated drawer working in a metallic slide and held in place by a spring. Into the drawer is placed a piece of prepared carbon. It is claimed for it by the manufacturers that this ends the interest of the automobilist in the heater, except in so far as he cares to keep his feet upon it for fifteen hours. The coal is prepared by a special process into briquettes which, it is claimed, will burn without gas or odor till consumed, at a cost of 1/4 cent per hour. The outward appearance of the heater has been made as handsome as may be consistent with anything so practicable as shown in the illustration.

**RUBBER TIRE SUPPORT.**—A device designed to relieve solid rubber tires from crushing strain or pressure while standing idle in the stable is manufactured by Curtis Wigg & Co., 911 Park Row Building, New York. The device is made in two forms, one a flat metal plate with a depressed longitudinal center made on the arc of a circle. Four of these plates are sunk into the floor in exact position to receive the four wheels, the slots being of a width to exactly take the tires, but so narrow that the edges of the wheel rims rest on the flat edges of the slot. The slot is slightly deeper than the tire, so that the weight of the vehicle is carried by the rim instead of the tire. The other form is portable and is reversed, resting on a flat base and having a straight longitudinal passage through it, with inclined sides rising toward a central downwardly curved portion designed to just fit the curve of the rims and lift the weight off of the tires. These supports can be moved to any position desired on the floor of the storage station, but are so heavy—being made of

rounding atmosphere. The other illustration is of a tool set assembled in an attractive leather roll and fitted with a pocket running its full length for smaller articles.

**LEGGETT VEHICLES.**—The newly-formed J. S. Leggett Mfg. Co. will build gasoline vehicles to carry two, four and six persons. The two-passenger machine will have a motor strong enough to permit the attachment of rear seats so that four can be carried. The six-passenger machine will be a French type tonneau. The original idea of turning out a cheap machine has been abandoned. Mr. Leggett has been interested in motor vehicles for several years, having made one of the first machines in the city.

**AUTO. AGENCY.**—The Stevens Arms & Tool Co., Chipewee Falls, Mass., has opened an agency in New York for the automobile it manufactures, known as the Stevens-Duryea. It is at 523 Fifth Avenue. C. H. Martin, who was the observer for the Duryea machine during the reliability run between New York and Boston, will be in charge.

**PEERLESS AGENCY.**—F. E. Randall, of Boston, has taken the agency of the Peerless automobiles of Cleveland for the New England States.

**GAINS MORE ROOM.**—The Hart Mfg. Co., 270 Atlantic Ave., Boston, is enlarging its factory. This company makes motorcycle parts and running gears for automobiles on a large scale.

**MITCHELL MOTOR CYCLES.**—In a colored leaflet issued by the Wisconsin Wheel Works, Racine, Wis., attention is called to the purchase by the U. S. Government of Mitchell Motor Bicycles for use in the Signal Service.

## STORAGE, REPAIR AND SUPPLY STATIONS SPEED LAWS AND OTHER REGULATIONS

### ARIZONA

#### Prescott

Brown Bros.

#### Tucson

Jas. B. Saeger.

### CALIFORNIA

**SPEED**—By local ordinances limited 4 m. to 12 m. Penalties, not exceeding \$500, or imprisonment not exceeding 6 mos. Lamps and Bells—Required by most ordinances. License—In Napa, \$10 a year. San Francisco forbids storage of more than 5 gallons of gasoline within buildings.

#### San Francisco

Lakin St., 909. Leavitt & Bill.  
Tremont St., 97. Manufacturers Co.  
White Sewing Mach. Co.

#### Oakland

Leavitt & Bill.  
Mobile Co., of America.

#### San Jose

Osen & Hunt.  
Millard Bros.

#### Sacramento

Jim Banta.  
Viking Cycle Co.

#### Los Angeles

Broadway, So., 168. Locomobile Co., of America.  
Main St., 439. Crippen & Church.

#### San Bernardino

Parker Iron Works.  
Williams Cyclery.

#### Riverside

Magnolia Auto. Co.  
Stoner Machine Shop.

#### Redlands

Redlands Iron Works.

#### Pasadena

Pasadena Machine Shop.  
Hodge Bros.

### COLORADO

#### Denver

California St., 1455. Geo. E. Hannan.  
Felker Automobile Co.

#### Colorado Springs

W. O. Anthony.  
F. F. Burnstead.

#### Pueblo

C. W. Fowler.  
Pueblo Novelty Works.

### CONNECTICUT

**SPEED**—Outside city limits, 15 m.; inside, 12 m.; reduced at crossings; penalty for violation, not more than \$200. Horns or Gongs—Not required by letter of law. Lamps—Required on all rubber-tired vehicles; must be lighted from 1 hour after sunset to 1 hour before sunrise; penalty, \$5. If lights go out, operator "may proceed at 6 m. and give audible signal as often as 500 ft. are passed over."

#### Hartford

Alien St., 304. S. A. Miner.  
Wells St., 43. Hartford Automobile Station.

### New Haven

Goffe St., 105. H. C. Holcomb.  
State St., 532. Reichert's Auto. Station.

### DIST. OF COLUMBIA

#### Washington

**SPEED**—Outside city limits, 15 m.; off car-line streets, 12 m.; on intersecting car-line streets, 6 m. License—Required; fee, \$3; penalty, for operating steam vehicles without permit, \$1 to \$40.  
Conn. Ave., N. W., 1124. National Capital Auto. Co.

### FLORIDA

#### Jacksonville

F. E. Gilbert.

### GEORGIA

#### Atlanta

Forsythe St., So., 55. C. H. Johnson.

### ILLINOIS

#### Chicago

**SPEED**—Everywhere in town, 8 m. Bells—Required, to be sounded at street crossings, etc. Whistles and Horns—Prohibited. Lamps—Required; must be lighted between dusk and dawn. License—Operators required to have license; fee, first year, \$3; thereafter, \$1. Fine for driving without license, \$5 to \$25. Numbers or Initials—Not required. Brakes—Two sets required, one independent of driving gear. Special—No machinery may be left running when vehicle is standing in street with no one in charge. In other cities and towns, various local regulations apply.  
Calhoun Pl., 4. A. J. Millman.  
Cottage Grove Ave., 531. C. A. Coey & Co.  
Plymouth Pl., 12. S. S. Williams.  
State St., N., 255. Chicago Auto. Repository Co.  
Superior St., E., 395. North Division Auto. Co.  
Van Buren and Oakley Blvd. Hagmann & Hammerly.

### INDIANA

**SPEED**—No state law. Various local regulations 8 to 10 m. in city limits. Fine for violation, \$1 to \$50.

#### Terre Haute

S. Seventh St., 25. A. Chaney & Bro.

### IOWA

**SPEED**—No state law. Davenport City Ordinance limits speed to 8 m. Bell and Lamp—Required.

#### Cedar Rapids

Cedar Rapids Supply Co. J. C. Pickering.

### LOUISIANA

#### New Orleans

Baronne St., 400. Automobile Co., Ltd.  
Baronne St., 408. Abbott Automobile Co.

### MASSACHUSETTS

**SPEED**—State law provides outside city limits, fire district or thickly settled part of town, 15 m.; inside such limits, 10 m.; approaching horses, reduce speed if animal shows fright and stop on signal of driver; reduce at crossings. Penalty—Fine not exceeding \$200, or imprisonment not exceeding 10 days, or both. Ordinances—Various local regulations in cities and towns.

#### Boston

**SPEED**—In city streets, 10 m.; in parks, 8 m.; outside city, 15 m. Lamps—Three required. Parks—Permit required from Park Department. Columbus Ave., 43 and 45. G. T. Gould.  
Columbus Ave., 147-153. A. J. Coburn & Co.  
Clarendon and Stanhope Sts. Back Bay Hydro-Carbon Repair Co.  
Stanhope St., 66-68. Tremont Auto. Headqts.  
Tremont and Berkley Sts. Boston Salesrooms.

#### Cambridge

Mass Ave., 424. Crest Mfg. Co.  
Palmer St., 8-10. Harvard Auto. Co.

#### Salem

Dodge & Lafayette Sts. Zina Goodell Mfg.

#### Springfield

**SPEED**—State law applies. Reduce at street intersections. Lamps—Required 1 hour after sunset; not enforced. Alarm—Required to be sounded as necessary. Parks—Permit required for Forest Park; furnished free; rules accompany permit. No registration.  
Dwight St., 36-38. J. E. Cowan, Mgr.

#### Taunton

Post Office Sq., 4-5. Robertson Auto. Station.

#### Waltham

Newton St., 136. Waltham Auto. Co.

#### Worcester

**SPEED**—10 m. Gong or Horn—Required. State law applies.  
Foster St., 43. Worcester Auto. Station, No. 1.  
Main St., 671-673. Robinson Auto. Station.

### MISSOURI

#### Kansas City

11th St., E., 320. Day Automobile Co.  
Main St., 708. Wittman Co.

#### St. Louis

Olive St., 3935. Miss. Valley Transportation Co.  
Olive St., 4259. Missouri Auto. Co.

### NEBRASKA

#### Omaha

Olds Gas Engine Works.

### NEW JERSEY

**SPEED**—Various city, town and county ordinances, limiting to 6 to 12 m.; penalty, \$5 to \$200. Lamps—Required in some towns, together with alarm signals. Initials—Required by most of the ordinances.

#### Atlantic City

Atlantic Ave., 1003. J. C. W. Parsons.  
Maryland Ave., S., 12. H. W. Cochran.

#### Newark

Mechanic St., 27. W. B. Dodge.

#### Paterson

Broadway, 405. F. W. Stockbridge.

### NEW YORK

**COCKS LAW**—Speed—Outside corporate limits, 20 m.; on bridges, 4 m.; inside corporate limits, 8 m., except where higher speed is permitted by local ordinances; penalty, \$50 or imprisonment not exceeding 6 mos., or both. Highway Law (Doughty)—Speed—Outside built-



up parts of towns and villages, 15 m.; in built-up parts, 8 m. Registration—Owner must secure certificate within ten days after getting machine; fee, \$1. Initials—3 in. high, ½ in. wide on back of each vehicle. Lamps—2 required, white in front, red in rear; must be lighted 1 hour after sunset, 1 hour before sunrise. Horn or bell required. Brakes—Good and efficient; penalty not exceeding \$25. Local Ordinances—The state law prohibits local town and park boards from excluding automobiles from open highways; from placing lower speed limits than 8 m., and from requiring license or permit except from owners of public vehicles.

### New York City

7th Ave., 515. Smith & Mabley.  
38th St., 136. Standard Auto. Co.  
38th St., W., 138. Oldsmobile Co.  
38th St., W., 141. Banker Bros. Co.  
43d St., W., 28. A. G. Spalding & Bros.  
43d St., W., 50. Banker Bros. Co.  
44th St., W., 307. Long Acre Auto. Depot.  
44th St. and 5th Ave. Westchester Auto. Co.  
50th St., W., 239. Alexander Fisher.  
51st St., W., 143. Knickerbocker Auto. Station.  
57th St., E., 140. John Wanamaker.  
57th St., E., 154. Metropolitan Motor Car Co.  
58th St., E., 33-39. Barry & Hayes.  
58th St., E., 150-152. Winton Motor Carriage Co.  
59th St., W., 306. A. Elliott Ranney.  
60th St., W., 10. Webster Auto. Co.  
60th St., W., 38. American Storage Co.  
66th St., W., 57. St. Nicholas Auto. Depot.  
80th St., W., 250. Pa-delford & Bell.  
86th St., E., 205. Yorkville Auto. Station.  
89th St., W., 202. West End Storage Co.  
98th St. and 5th Ave. E. R. Fisher.  
100th St., cor. Broadway. Homan & Schulz.  
120th St., E., 175. Chas. Strathman.  
127th St., W., 152. West End Auto. Exchange.  
127th St., W., 153. Harlem Auto. Co.  
Broadway, 1684. Central Auto Co.  
Jerome Ave., 1918. Hoffman & Setzer.

### Brooklyn

Bedford Ave., 712. Lincoln C. Cocheu.  
Bedford Ave., 753. J. W. Mears.  
Bedford Ave., 1148. Arthur R. Townsend.  
Clinton St., 10. Maltby Mfg. Co.  
Flatbush Ave., 342-44, near Eighth. A. G. Southworth.  
Flatbush Ave., 473. Alex. Schwalbach.  
Fulton St., 1239. Brooklyn Auto. Co.  
Fulton St., 1241. Chas. W. Spurr, Jr.  
Schermerhorn St., 58. Patterson & Shaw.

### Albany

Central Ave., 97. Auto. Storage & Trading Co.  
Pearl St., N., 167. Albany Auto. Works.  
Sherman St., 255. C. F. Weeber Mfg. Wks.

### Amsterdam

Division St., 8. Gode & Brown.

### Buffalo

SPEED—8 m. on built-up streets, 15 m. outside; rounding corners, 5 m. Lamps—All hours after sunset. State law applies in other regulations.  
Main St., 873-875. W. C. Jaynes Auto. Co.

**CRONE STEAM ENGINE.**—Ball-bearing steam engines and sets of engine parts for use in steam vehicles are being offered to the trade by F. G. Crone, of Pottsville, Pa. Engine No. 1 has hard, wide bearings and self-oiling features. It is fitted with a large water pump for boiler feed. The engine is of the plain slide valve type with two cylinders and steam chest cast in one piece, bore 2½-3 by 3¾-inch stroke. It develops from 6 to 7 h.p. The valves are scraped to a tight fit, the piston is shrunk and riveted on 7-16-inch steel piston rod and has two spring packing rings. The eccentrics are hard steel 5-8-inch wide. The crank-shaft, with cranks, cams and sprocket center, is one piece, but the

**Rochester**  
Exchange St., 74. C. J. Connolly.  
South Ave., 150. Rochester Auto. Co.

### Syracuse

SPEED, ETC.—See state law. No local legislation.  
Onondaga St., W., 110. Hoffman & Weaver.  
Warren St., So., 346. Syracuse Auto. Co.

### Troy

Fulton St., 359. James Lucey.

### Utica

Oneida Square. Miller-Mundy Motor Carriage Co.

## OHIO

SPEED—Various ordinances in cities, towns and villages, 5 m. to 15 m.; penalty, \$1 to \$100. Lamps and Bells—Required by most ordinances. Registration—No state law.

### Cleveland

SPEED—Within ¼-mile from east and west ends of Superior Street viaduct, 7 m.; outside such radius, 15 m. Must stop upon signal from horse driver. License—Required; fee, \$1. Numbers—Registered numbers must be attached at rear and kept clean. Lamps—One on each side must be kept lighted during darkness. Bell or Horn—Required, and must be sounded when there is danger of accident. Penalty—For violation of any section, fine not exceeding \$50.  
Prospect St., 146. The Cleveland Automobile Supply Co.

### Columbus

SPEED—Off of business streets, 14 m.; on business streets, 8 m. Penalty—Fine from \$5 to \$50 or 30 days' imprisonment. Bells or Horns—One or other required to be sounded when necessary. Lamps—Required after dark. Penalty—Fine not exceeding \$50.

### Toledo

SPEED—Inside city limits, 10 m.

### Cincinnati

SPEED—In streets and parks, 8 m. Horns or Gongs—Must be sounded 100 ft. before street crossings. Lamps—Must be lighted between sunset and sunrise. Brakes—Efficient brakes required. License—None required. Initials—None required. Tolls—Bridge toll, 10 cents. Special—Two vehicles must not travel abreast.  
Main St., 640. Special Motor Vehicle Co.  
Race St., 807-809. Cincinnati Auto. Co.

## PENNSYLVANIA

SPEED—Various ordinances limit it 6 m. to 10 m. Penalty—\$10 to \$100. Lamps and Bells—Required by a few ordinances.

### Philadelphia

Broad St., N., 138. Quaker City Auto. Co.  
Broad St., N., 246. Winton Motor Carriage Co.  
Broad St., N., 250. Pennsylvania Elec. Vehicle Co.  
Broad St., N., 304. Broad St. Auto. Station.  
23d and Walnut Sts. John Wanamaker.

sprocket ring is detachable without disturbing the cranks or cams. The cylinder heads and frame heads are ground to fit and there are no gaskets to blow out. The journals are 11-2 inches wide and of hard steel. The ball-bearing engine has 1-2-inch balls in the crank-shaft and 5-16-inch balls in the connecting rods. Extreme dimensions of the engine are 21 inches high, 13 1/4 inches wide and 7 1/4 inches deep; weight, 72 pounds. Engine No. 2 is of the same dimensions, but a trifle heavier. It has a cast iron frame and phosphor bronze crosshead for take-up of wear.

**TIRE SLIPPING.**—As a remedy against the dangers of slipping, C. J. Bailey & Co., 23 Boyl-

### Lancaster

Queen St., N. 219. S. G. Roth.

### Pittsburg

SPEED—6 m. to 10 m. Penalty—\$25 to \$100. Tax—Single-seated vehicle, \$6; others, \$10.  
Center Ave., 5909. J. P. Oden.

### York

SPEED—In city limits, 8 m. Lamps—Must display one or more lights.  
George St., N., 14. J. P. Oden.  
Market and Beaver Sts. J. H. Snyder.

## RHODE ISLAND

SPEED—Law provides that any person driving faster than a common traveling pace in any of the streets of Newport or Providence, or in the compact part of any town or village, or in any road leading from Pawtucket to compact part of Providence be fined from \$5 to \$20, or imprisoned for 10 days. For racing on roads, or streets, \$10 or imprisonment for 10 days. Bells and Horns—One or other required, but must not be used excessively. Muffler—Required at all times on public highways. Initials—In black letters 2 in. high.

### Providence

Opposite Union Station. H. G. Martin & Co.

## TEXAS

### Houston

Main St., 719. Houston Cycle Works.  
Texas Ave., 903. Clark & Hawkins.

### El Paso

P. L. Abel Cycle Co.  
El Paso Cycle Co.

### Dallas

D. W. McElroy.  
Texas I. & M. Co.

### Galveston

Market St., 2120. E. H. Labadie.  
Tremont St., 712. J. Christensen & Co.

### San Antonio

Commerce St., W., 218. Roach & Barnes Co.  
Navarro St., 809. Chas. J. Chabot.

## UTAH

### Salt Lake City

Main St., So., 23. O. R. Meridith.  
2d So. St., W., 62. Wilkes Cycle Co.

## WISCONSIN

SPEED—Limited by various ordinances 4 m. to 10 m.; penalties, \$1 to \$50.

### Milwaukee

Broadway, 501. Bates-Odenbrett Auto. Co.

ton Street, Boston, offer testimonials of their "Won't Slip." This tire is covered with nodules whose edges are intended to take firm hold on wet asphalt and muddy road and pavement of any kind. The air space between the contact surface destroys the suction which the smooth tire experiences on the smoother pavements. Among the testimonials is one from W. K. Vanderbilt, Jr., and another from Dr. A. O. Squier, of Springfield, Mass.

**BAKER AGENCY.**—The agency for the Baker automobile, manufactured in Cleveland by the Baker Motor Vehicle Co., has been taken in New York City by the American Automobile Co., 138 West Thirty-eighth Street.

## Information for Buyers.

**MOTOR BOOK.**—Brooks Brothers, Twenty-second Street and Broadway, have issued a small pamphlet to which they have given the name of "Motor Book." It contains a digest of speed laws, records of races, etc., a list of automobile stations and clubs, and a description of highways or touring routes in New York and New Jersey.

**GASOLINE FILTER.**—The Stewart hydrocarbon filter, placed on the market by W. S. Howard, of Troy, N. Y., is an attachment made of aluminum in two sizes. It has ample filtering surface with a direct supply cock on the top and a removable plug in the base. By inserting this filter in the gasoline supply pipe where it enters the carbureter, the sediment and water is held and prevented from clogging the small valves. By unscrewing the bottom after a few days' use, the accumulation of dirt and water can be quickly removed.

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## Special Notices

Advertisements of second hand vehicles or parts for sale, or for Positions Wanted, inserted under this heading at 10c per line of about six words. Remittance must accompany copy.

**BARGAINS**—Locomobile, Style 3, with top; Locomobile, Style 2; Locomobile, style 2, with dos-a-dos seat; Steam Dos-a-dos, new; Steam Dos-a-dos, second-hand; Toledo Steam Model A, new; Toledo Dos-a-dos, steam touring car, French style. Write for particulars. Kline Automobile Co., Harrisburg, Pa. 20

**FOR SALE**—Trimoto Three Wheeler, nearly new, cheap. For particulars address Chester B. Smith, Harrisburg, Pa. 20

**FOR SALE**—Bargains in Second-hand Automobiles. Write for description and prices to C. A. Coey & Co., 5311 Cottage Grove Avenue, Chicago. 11

**FOR SALE**—Fournier-Searchmont Tonneau Car, Model 1902, good as new, run only four months, too large and fast for physician to use for making calls. Address Dr. J. F. Shafer, 422 Penn Ave., Pittsburg, Pa. 13

**FOR SALE**—A Gasoline Automobile in perfect condition at one-quarter its cost. Very fast and comfortable. 3 cylinder 12 h. p. motor; very wide seat and single rumble seat. Moore, 51 Liberty St., New York. 6

**FOR SALE**—Complete Running Gear with wood wheels, 3x28 Diamond tires, roller bearings; 6-½ h. p. vertical 4 cylinder gasoline motor and accessories; Copper water tank with air tubes; Upton transmission; Stanhope body painted one coat; All new and best material. Price, \$500. "G" 303 Commonwealth Bldg., Scranton, Pa. 13

**FOR SALE**—Stearn's Steam Runabout, in perfect condition; fitted with low-water alarm, feed-water regulator, steam superheater, feed-water heater, Kelley generator, auxiliary air and water pumps and set of fenders. Has been run but 600 miles, and is in first-class condition. Owner wants larger carriage and will sell cheap. Address "H. K. W.," care Automobile and Motor Review. 6

**FOR SALE**—Winton Touring Car, like new, \$1,800. Locomobile, \$275. Fine Steamer, with boiler in front, horizontal engines, steam air and water pumps, wheel steer, wood wheels, new Dunlop tires, \$800. Kensington Steam Runabout, new, \$450. Toledo Steam, like new, \$600. Gasmobile, with top and rumble, \$650. De Dion Motor-ette, with reversible front seat, 5 h. p. \$900. 3½ h. p. Motorette, \$700. 3½ h. p. De Dion Motor, with accessories, \$125. 4 h. p. Aultman Kerosene, \$125. Orient Motor Bike, \$180. Thomas 2 h. p. \$135. Automobile Storage & Trading Co. (Inc.), Albany, N. Y. 11

**FOR SALE**—One latest model Oldsmobile with wood wheels, top, extra set of batteries, extra gasoline tank, extra parts, etc., \$475. One New type 3 Searchmont Touring Car 12 h. p., \$900. One U. S. Long Distance Single Cylinder Tonneau Car, run only 200 miles. Was purchased new last month. Price, \$1,200. One Prescott Touring Car, first class condition, \$900. One Locomobile, style 02, with Steam Air Pump. Price, \$450. One Locomobile with top, has new boiler and just painted. An excellent steamer. Price, \$350. One Locomobile in good condition, \$200. Mobile Dos-a-Dos, first-class condition, \$500. F. W. Stockbridge, 450 B'dway, Paterson, N. J. 11



## Miscellaneous

Advertisements inserted under this head at 30 cents per line of about six words. Remittance must accompany copy.

**COMPRESSED AIR**—Its Production, Uses and Appliances, by Gardner D. Hiscox, M. E. Cloth \$5.00. Half Morocco \$6.50. Address F. L. Dion, 397 Broadway, New York, Room 1206.

**FOR SALE**—The Gas Engine Hand Book, giving complete information on gas engines. Well illustrated. Handsomely bound in leather, \$1.50, postage prepaid. Address F. L. Dion, 397 Broadway, New York, Room 1206.

**HOW** to Build a 3 h.-p. Launch Engine—Working drawings with complete description of materials and methods for the construction of a gasoline motor for a launch of about 20 feet. By E. W. Roberts. Price \$2.50. Send order to Book Department, Class Journal Co., 395 Broadway, New York

**HORSELESS VEHICLES**—Automobiles and Motor Cycles, by Gardner D. Hiscox, M. E. A practical treatise for automobilists and motor cyclists. 460 pages, 316 illustrations. Price \$3.00. Address A. L. Mixer, 395 B'way, New York, Room 1207.

**ORDER** a copy of "The Construction of a Gasoline Motor Vehicle" by C. C. Bramwell. Fully illustrated, neatly bound. \$2.00, carriage prepaid. Address A. L. Mixer, 395 Broadway New York, Room 1207

**OUR** Vacuum Smoke Cap for steam machines prevents back firing and increases draft, and it improves appearance of the machine. Price, \$5.00. Standard Automobile Supply Co., 1114 Betz Building, Philadelphia, Pa.

**THE** Practical Gas Engineer, by E. W. Longanecker. A manual of the practical management and operation of all classes of explosive motors using gas, gasoline and similar fuels. Describes the general construction, the installation, piping, ignition system and running of motors for shops, launches and motor vehicles. Sent upon receipt of \$1.00. Book Department. Class Journal Co., 395 Broadway, New York.

**WANTED**—An automobile that Raymond Brake cannot stop. Address A. H. Raymond, Bridgeport, Conn.

## NEW ELECTRIC DELIVERY

Wagon **FOR SALE** Cheap

Write for particulars, price, etc.

Century Motor Vehicle Co.  
SYRACUSE, N. Y.

**HOW** to Build a Motor Launch—A simple and practical work in every detail, showing how to construct a launch hull suitable for use with any description of motor. Designs of several launches, from 18 to 50 feet in length. Heavily illustrated. The most complete treatise on launch building yet published. Bound in cloth. Price \$1.00. Address W. P. Stevens, 395 Broadway, New York, Room 1207.

## DYKE PLUG, \$1.00



Copper Terminals  
Plug Switches, etc.

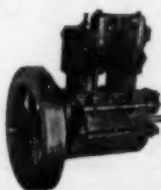
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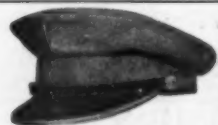
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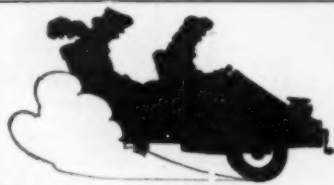
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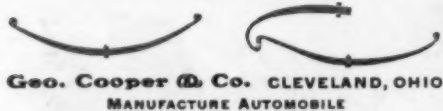
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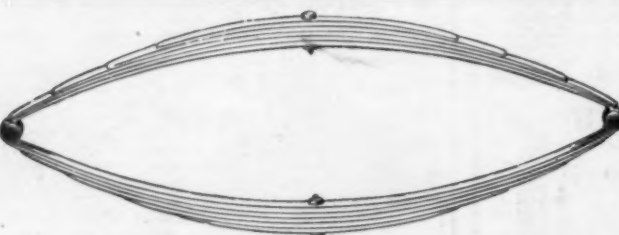
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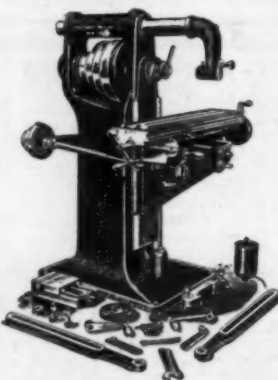
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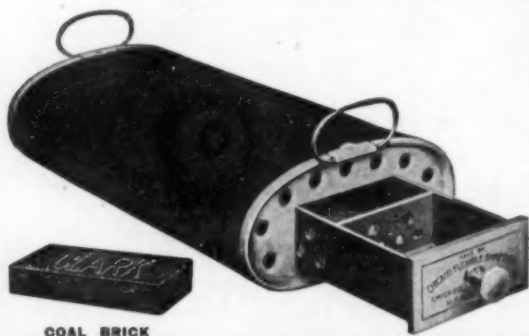
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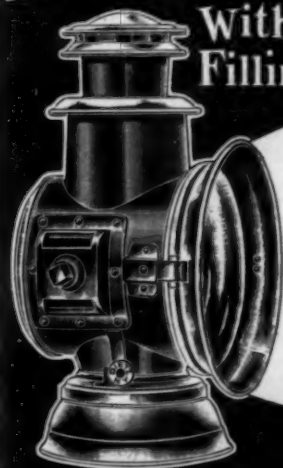
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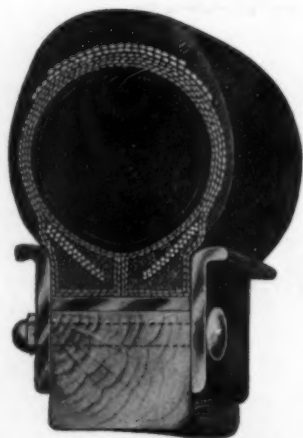
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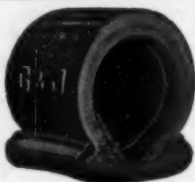
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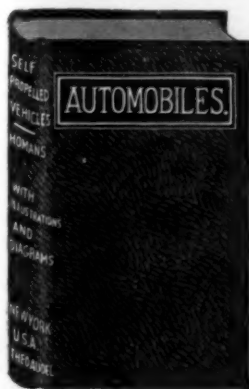
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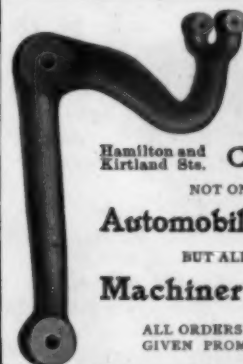
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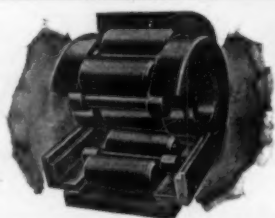
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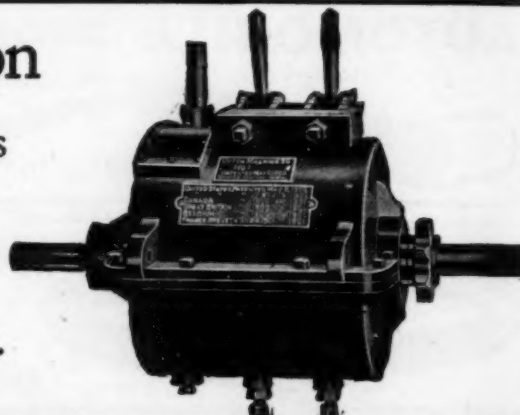
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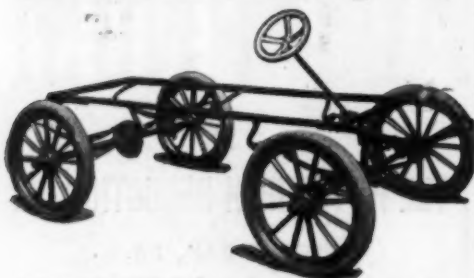
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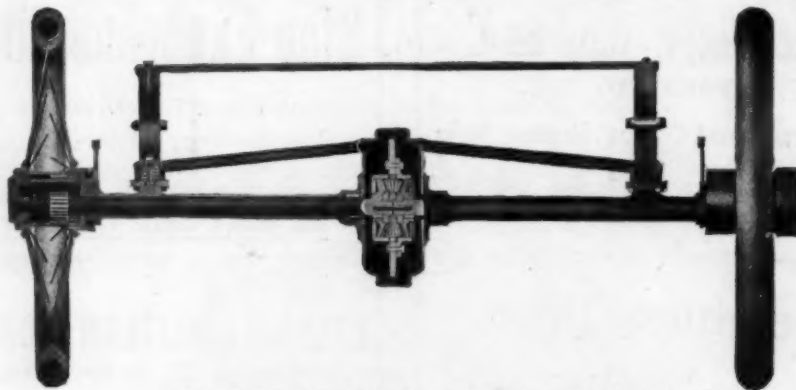
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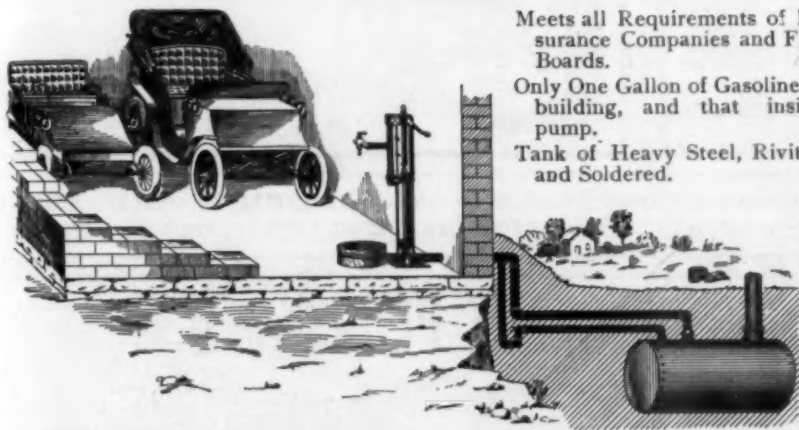
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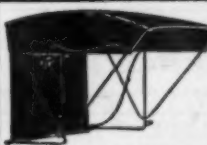
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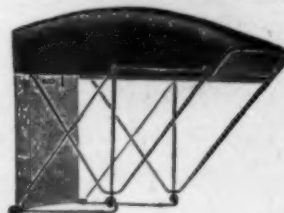
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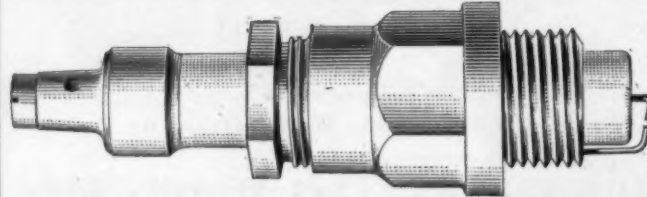
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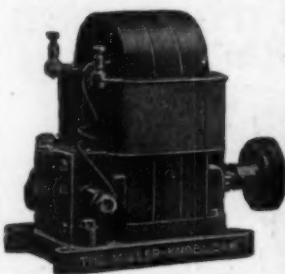
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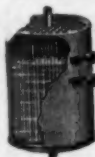


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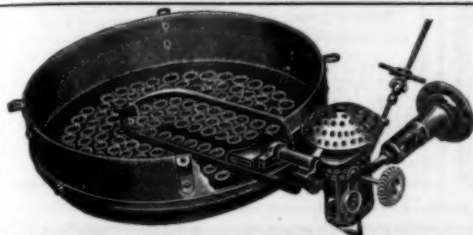
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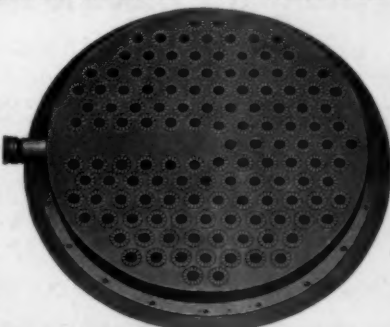
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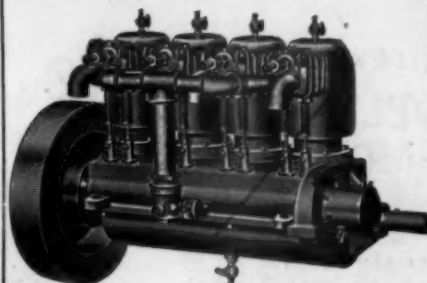
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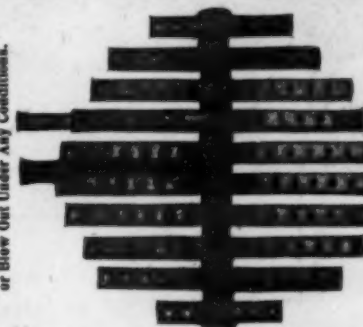
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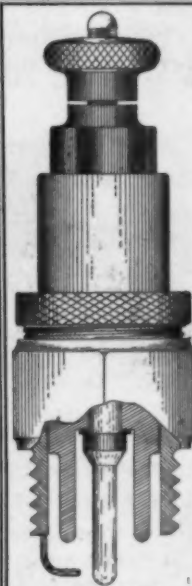
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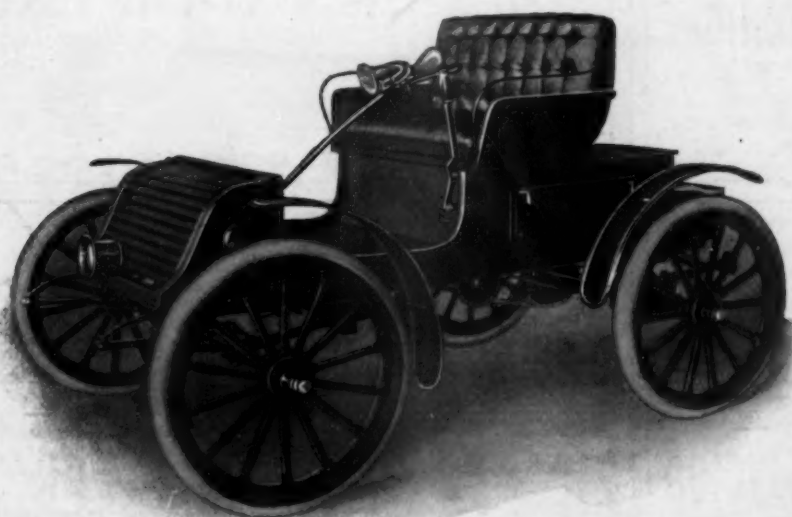
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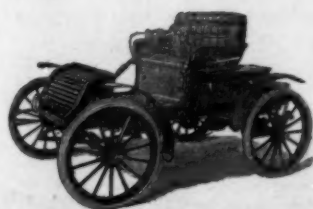
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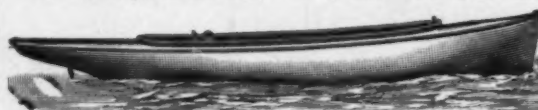
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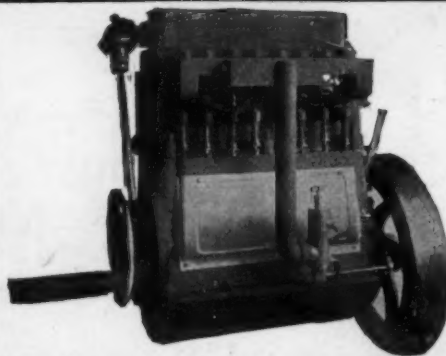
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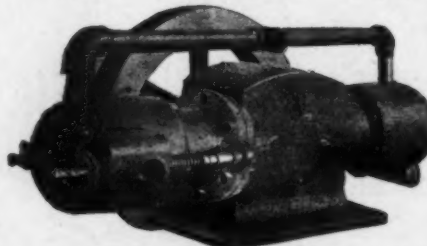
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